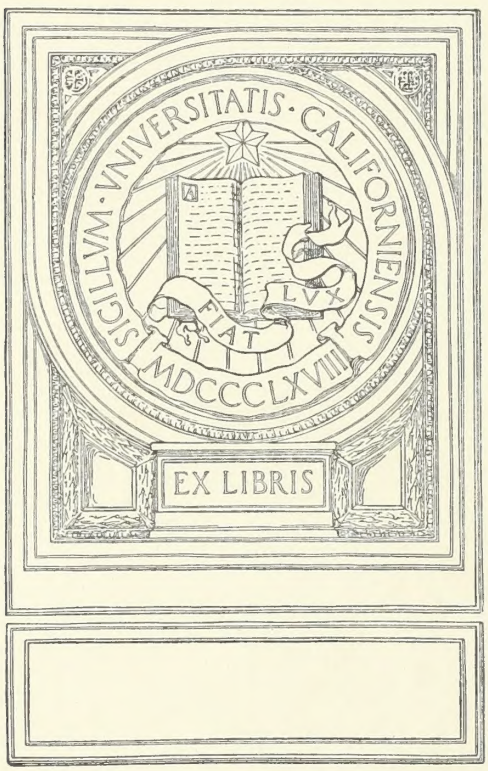
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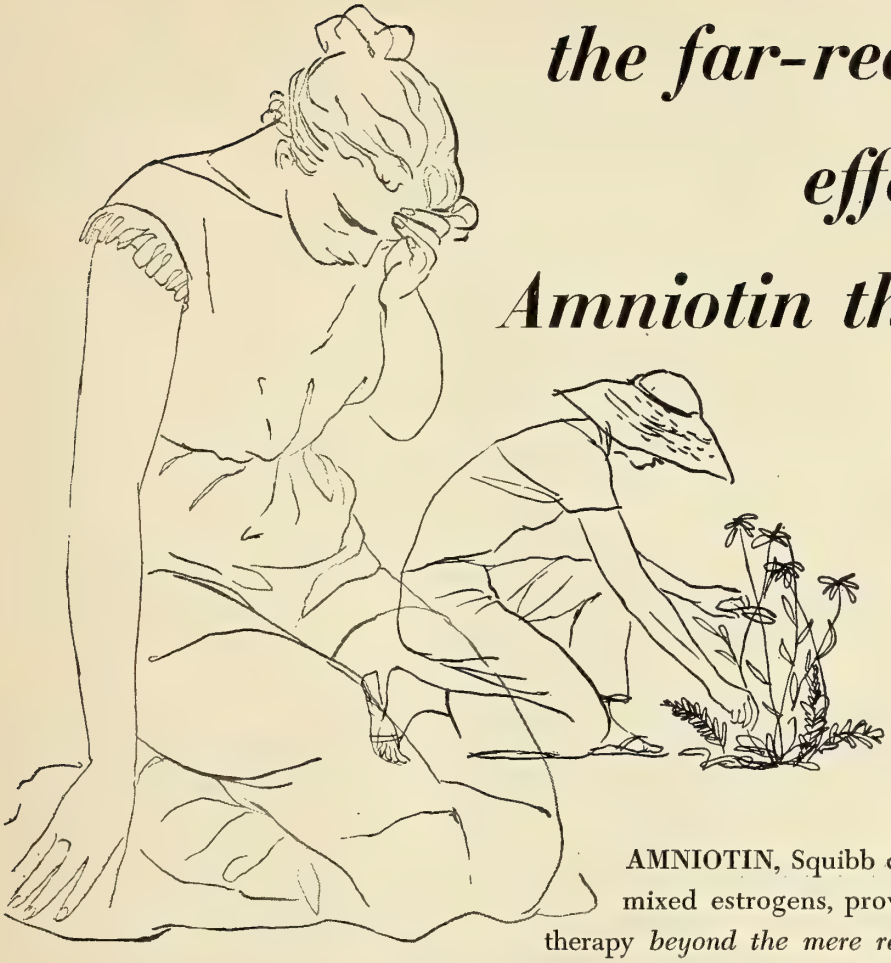
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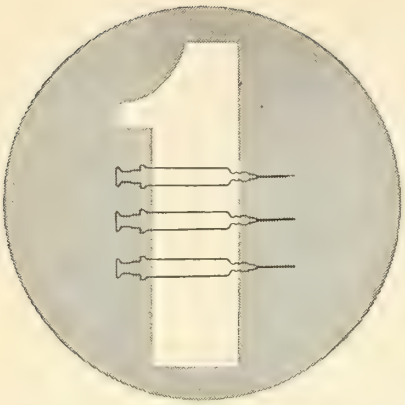
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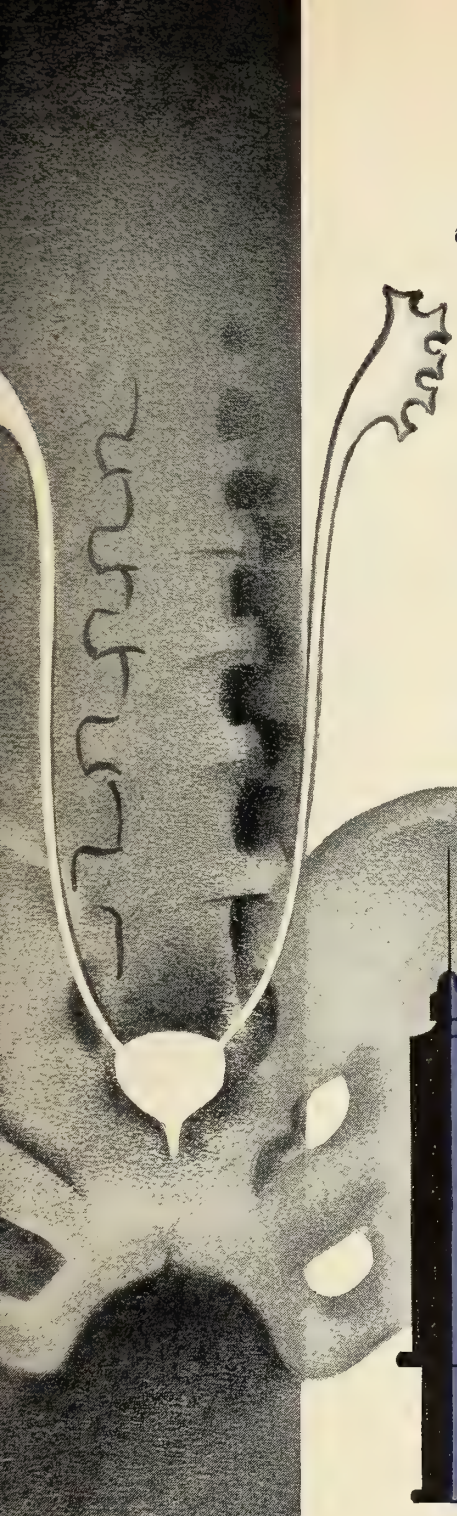
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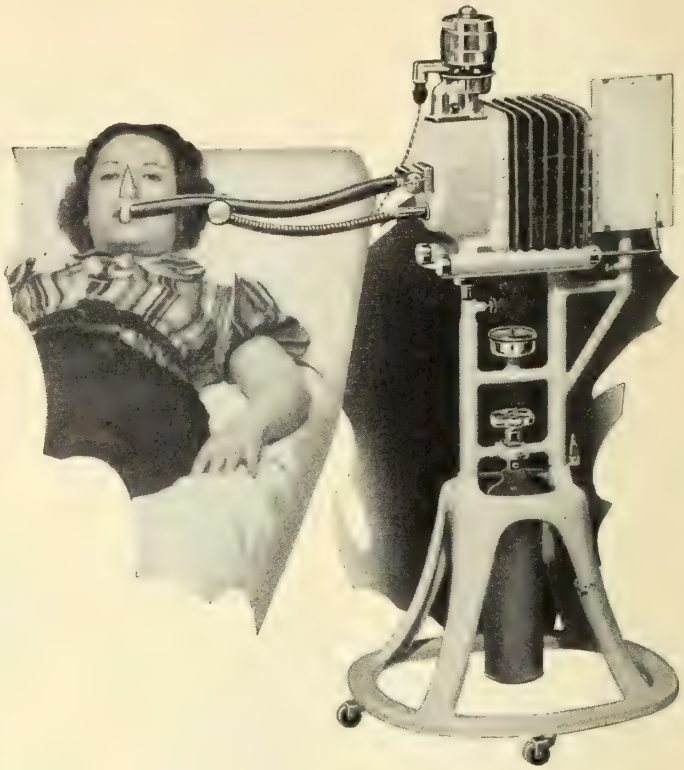
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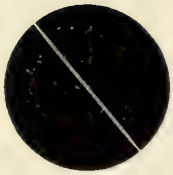
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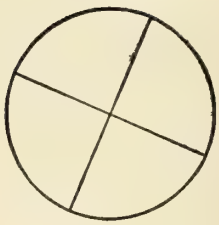
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[1]Harris, S. C.; Ivy, A. C., and Searle, L. M.: THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT: A Consideration of the Theory of Hunger and Appetite, J.A.M.A. 134:1468 (Aug. 23) 1947.

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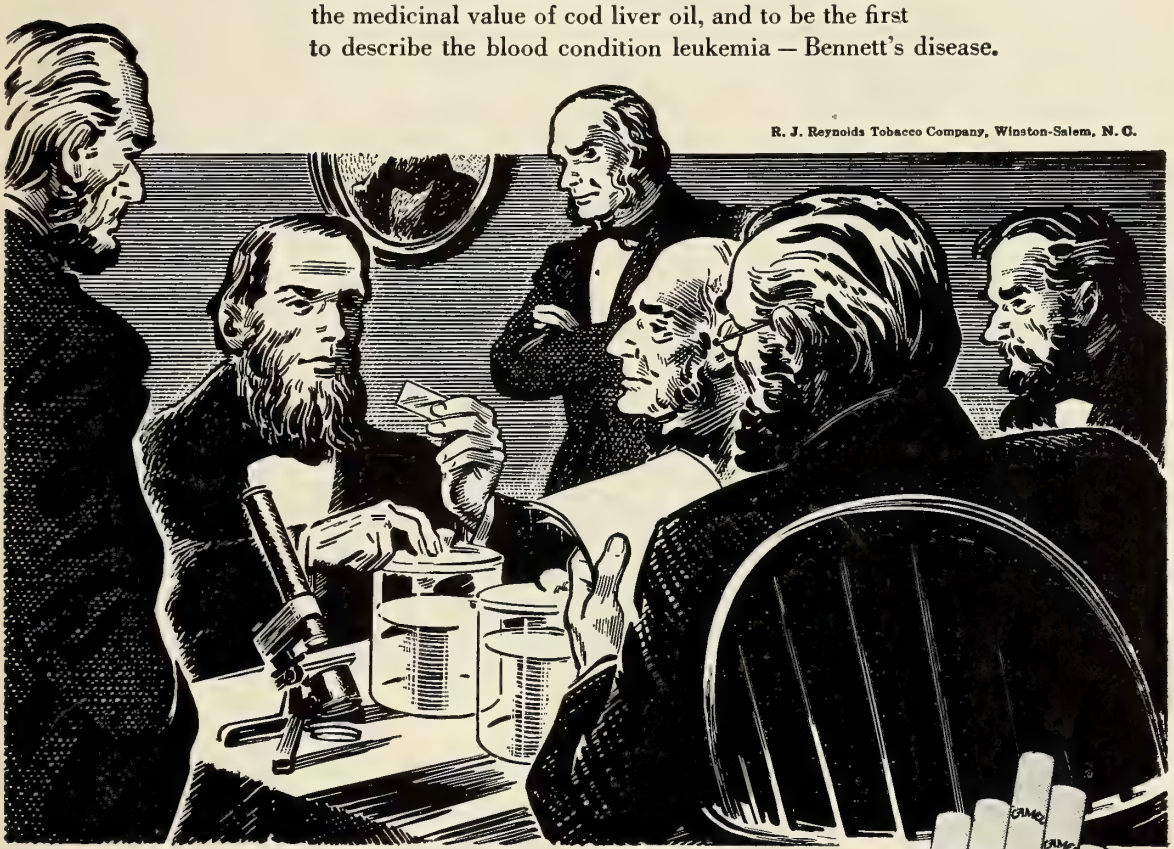
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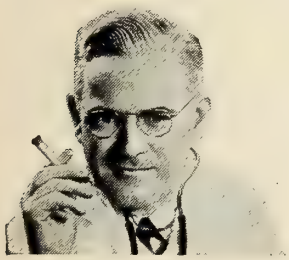
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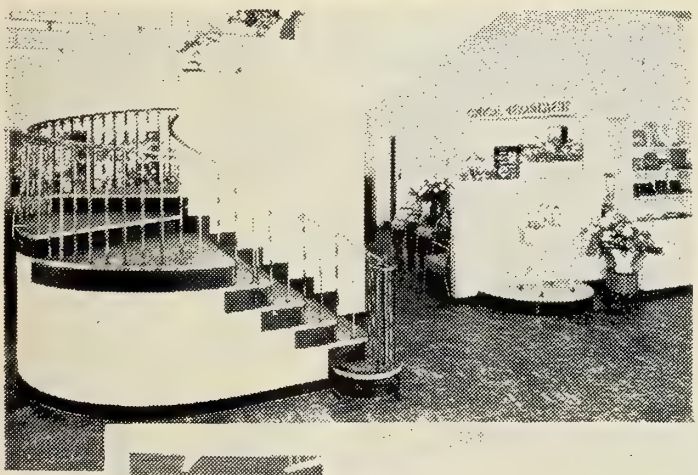
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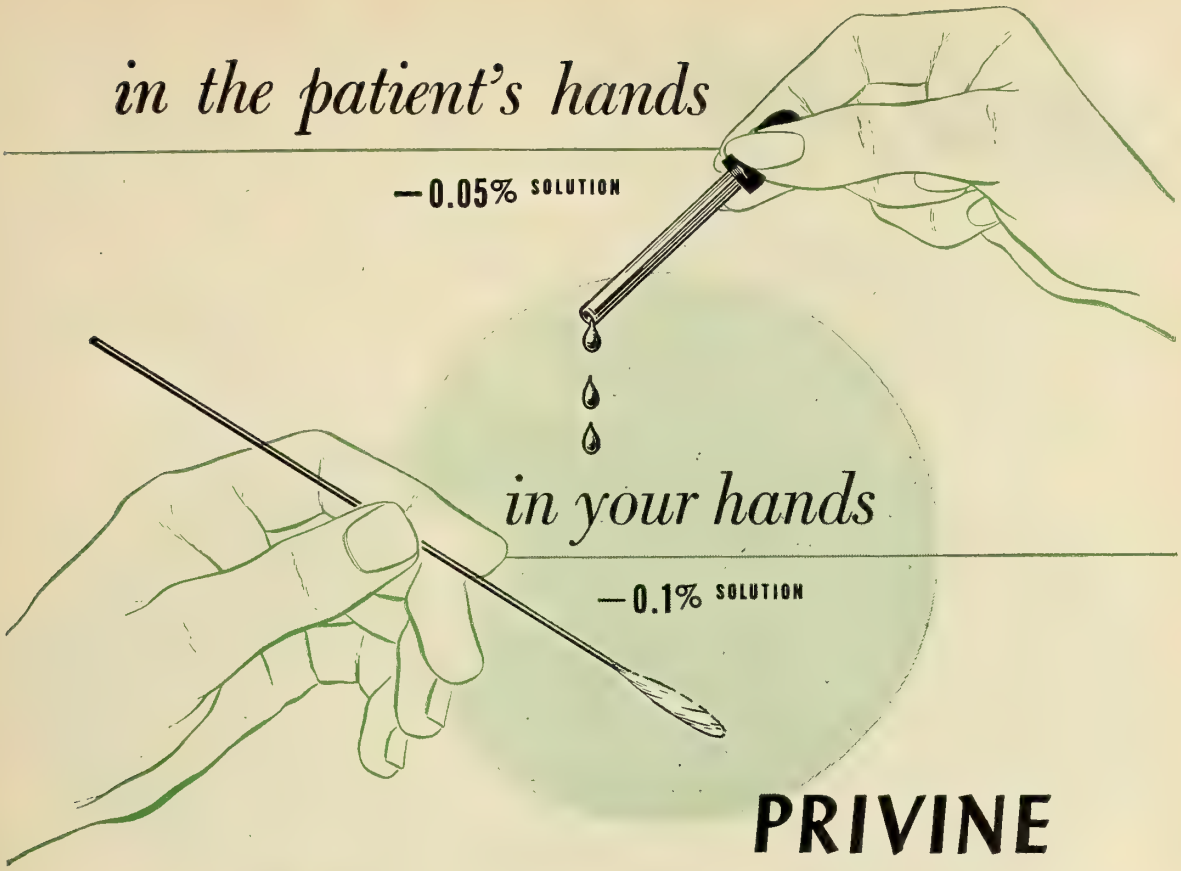
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*Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154
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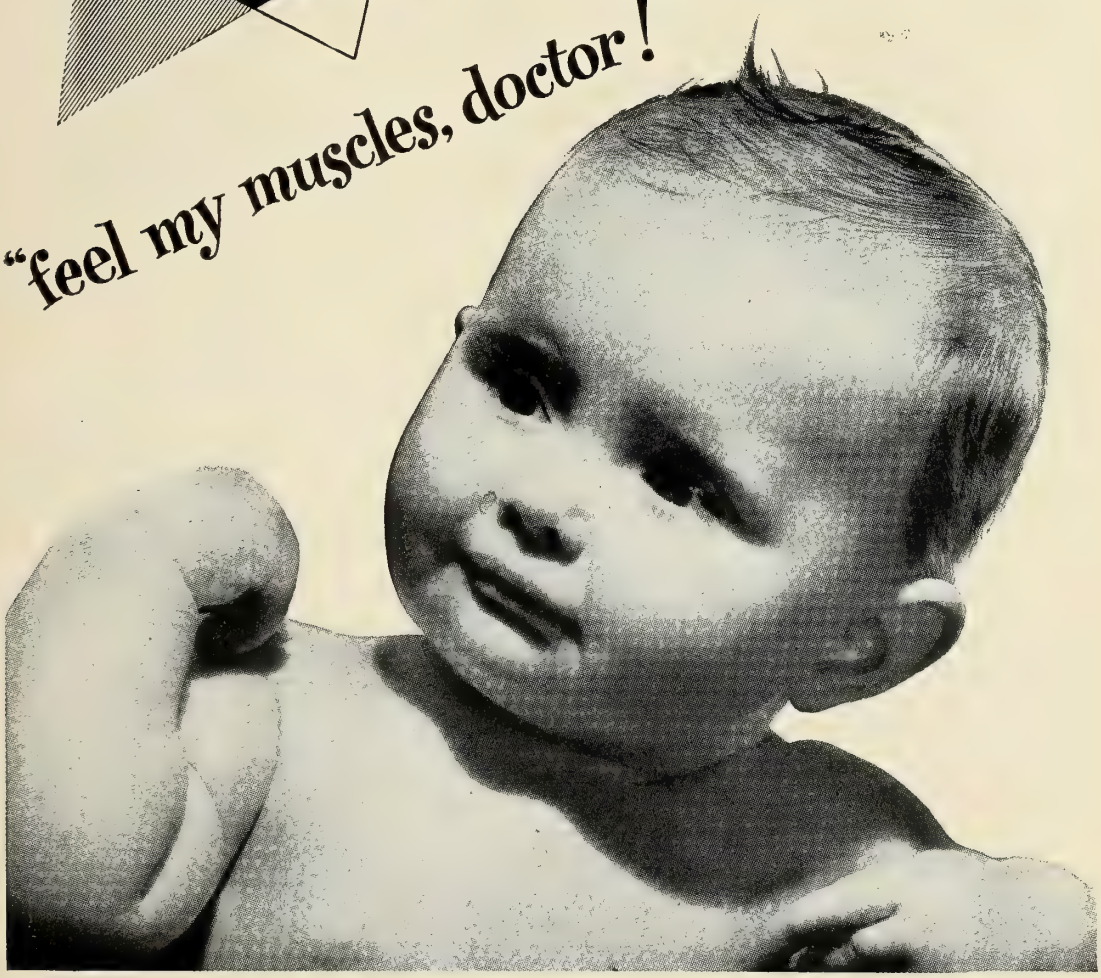
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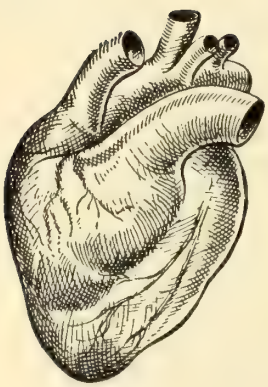
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1 Dunn, H. L.: Am. J. Pub. Health 36:1412 (Dec.) 1946.

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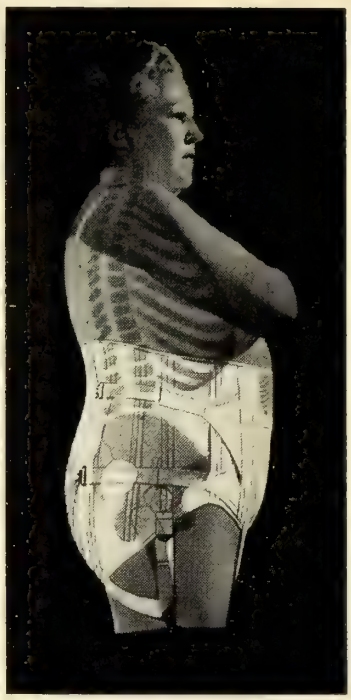


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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 January, 1948 No. 1

FOLLOW-UP DIAGNOSIS ON PATIENTS WITH X-RAY LESIONS

With Special Emphasis on Tuberculosis

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OF the 301,513 examinations in the mass chest x-ray survey conducted in Minneapolis during the summer of 1947, the x-ray interpretation in 3,791 instances was tuberculosis.* If sanatorium admissions were not carefully regulated, application might be made by part or all of these patients for admission to the sanatorium. That, of course, would be impossible, even under such favorable sanatorium conditions as exist in Minneapolis and Hennepin County. Fortunately, only a small portion of patients found to have x-ray lesions suspicious of tuberculosis need sanatorium admission. Therefore, we must devise some follow-up diagnostic procedure which will protect the community against infectious patients, conserve hospital resources, and give maximum benefit to the individual.

Since the start of the mass chest x-ray survey as a case-finding method in tuberculosis, many symptomless patients have gone to their physicians. As our experience with these surveys increases, we are repeatedly impressed with the incidence of other pulmonary and thoracic lesions. We are repeatedly impressed also with the fact that everything which looks like tuberculosis roentgenologically is not tuberculosis clinically. The variety of lesions increases as our diagnostic efforts increase. We know that the differential diagnosis of these intrathoracic lesions, although extremely difficult, becomes a very fascinating and rewarding endeavor. None of them is simple. Even the specialist will need to call freely on the special techniques of his colleagues.

With patients referred from the mass x-ray survey, the physician is faced with an experience which is just a little different from that of his daily office routine. He must urge special diagnostic studies upon a patient who is symptomless. A presenting complaint is " a spot on my lung." The extra effort needed to sell and make an early diagnosis, as compared to that needed when a patient has symptoms or is in the more obvious phases of disease, will be rewarded by a more favorable clinical response.

Perhaps the most prevalent single disease which will need to be considered in the differential diagnosis of lung lesions will be tuberculosis. I should like to limit my discussion largely to that phase of the diagnostic problem. The epidemiological significance of tuberculosis to the community places a grave responsibility on the physician not to rule out tuberculosis or call it inactive without adequate study in addition to the x-ray. The tremendous economic and social implications to the patient and his family make it imperative that the physician exhaust every resource to be absolutely certain that his diagnosis is based whenever possible on bacteriological evidence.

When a patient goes to a physician from a mass x-ray survey, he has at least a miniature film

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Read at the annual meeting of The American College of Chest Physicians held in conjunction with the annual meeting of the Minnesota State Medical Association, Duluth Minnesota, July 1, 1947.

Dr. Roemmich is Acting Tuberculosis Control Officer of the Minneapolis City Health Department.

*The figures quoted herein bring the report up to date as at close of survey October 15, 1947.

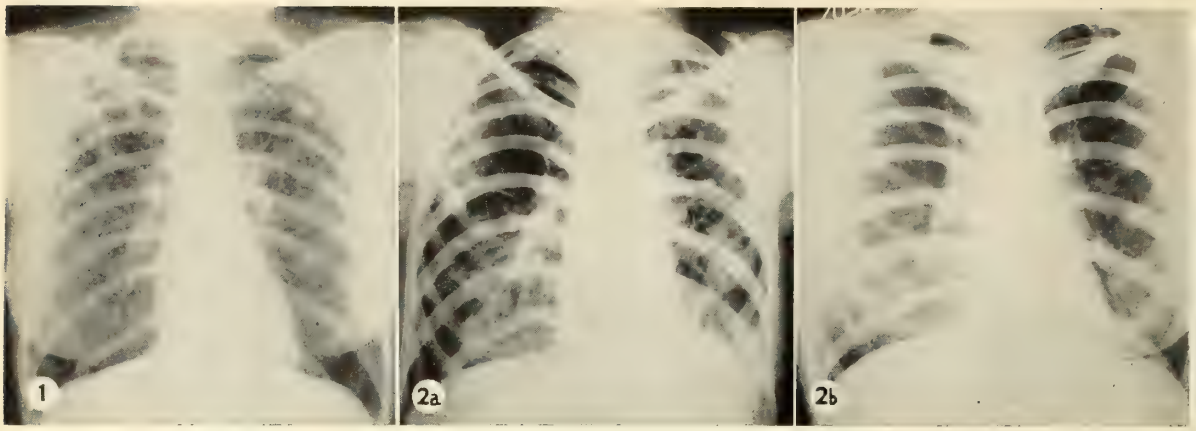


Fig. 1. *Case 1.* H. N., a woman, aged thirty-six, was diagnosed as having definite bilateral fibroid and exudative pulmonary tuberculosis. The diagnosis was made by x-ray only. After four months of intensive study in a sanatorium, tuberculosis was definitely ruled out. The final diagnosis was pulmonary fibrosis.

Fig. 2. *Case 2.* (a) O. R., a woman, aged twenty-eight, was diagnosed as having far advanced pulmonary tuberculosis over the left lung and the middle of the right lung, with bilateral cavitation. The diagnosis was made by x-ray only. (b) After eight months of intensive study, the lesions gradually disappeared. The final diagnosis was subacute Loeffler's syndrome.

reading. Upon this evidence a diagnosis should never be based. In Minneapolis, and in some other projects as well, he also will have had a 14 by 17-inch film. The diagnosis of tuberculosis from x-ray alone is never permissible. To make it in exceptional cases, on a little additional evidence in a very isolated rural area, is understandable. To make it on x-ray evidence only, where laboratory and other special techniques are available, is inexcusable.

What are some of the diagnostic procedures which should be used in the differential diagnosis of tuberculosis? We cannot discuss them all. I would like to suggest four, all four of which can be used by a general practitioner or chest specialist: (1) x-ray, (2) bacteriological studies, (3) tuberculin test, and (4) history and physical examination.

The x-ray is an economical tool in tuberculosis case finding. It is a most useful aid in making a diagnosis of tuberculosis. For follow-up and treatment it is essential. I can think of no diagnostic aid which in recent years has been subjected to such a large scale use—one which has been cross-examined by a skeptical public and not a few in our professional groups. Yet it remains as one of the objective and valuable diagnostic aids. My discussion of its use in the differential diagnosis of tuberculosis is not intended to discredit x-ray but to urge an even wider application with a more extensive use of complementary diagnostic aids. I shall present three cases, two of which were obtained through the courtesy of Dr. Sumner S. Cohen at Glen Lake Sanatorium. These cases illustrate how the x-ray can be used to aid the making of a diagnosis. At the same time they illustrate how hazardous it can be to use x-ray alone. These are not isolated cases; many others might be cited.

Case Reports

Case 1.—H. N., (No. 9752) a thirty-six-year-old woman, went to see her physician on August 20, 1946, complaining of slightly swollen ankles of twenty months' duration. At this time there were no symptoms referable to her lungs. As part of a general physical examination, her physician requested a chest x-ray. The roentgenologist reported definite pulmonary tuberculosis. Application was made to Glen Lake Sanatorium, and within eight days the patient was admitted. There was no history of exposure. Temperature and pulse were normal and remained so throughout her sanatorium stay. The admitting physician reported slight increased whispered voice sounds in both apices. Admission x-rays (Fig. 1) were interpreted by an experienced roentgenologist as follows: "Bilateral fibroid and exudative pulmonary tuberculosis extending to the second right anterior interspace, and to the second left anterior interspace with questionable cavitation in the right apex."

Several x-rays during her sanatorium stay showed no change. Repeated tuberculin tests using the two National Tuberculosis Association standard test doses of PPD, and four doses of O.T. ranging from .1 to 10 mg., were negative. Sputum was absent, and four gastric washings were negative for tubercle bacilli. Other laboratory studies revealed no abnormalties. After four months of study the patient was discharged with a diagnosis of chronic pulmonary fibrosis of unknown etiology.

We must recognize that the exact etiology in this case was never demonstrated. However, I

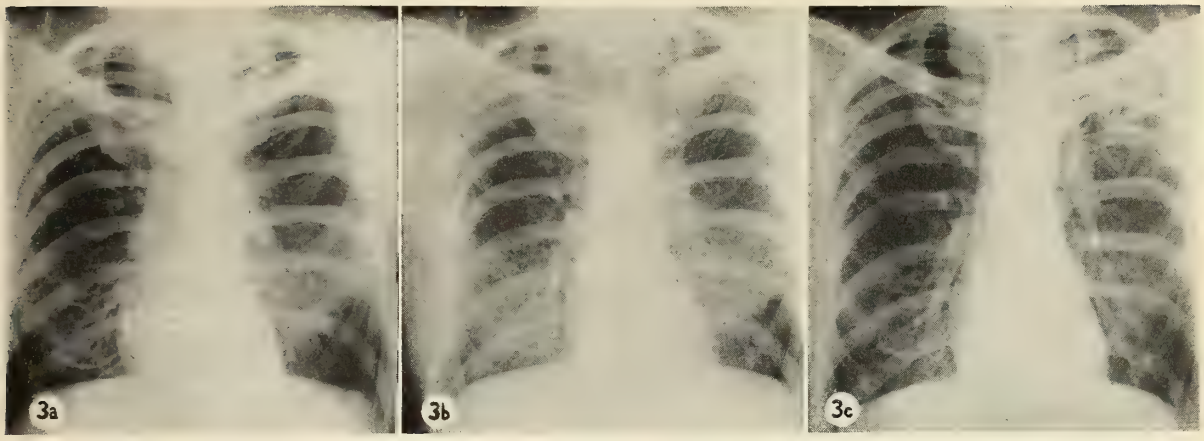


Fig. 3. *Case 3.* (a) H. J., a man, aged fifty-three, was diagnosed in December, 1941, as having "healed primary childhood tuberculosis." The diagnosis was made by x-ray only. (b) An x-ray taken in March, 1943, was interpreted as "no change, healed primary tuberculosis." (c) In March, 1947, fatigue, expectoration and chest pain appeared. The diagnosis by x-ray was reactivation of childhood tuberculosis. Ten sputum smears were negative for acid-fast bacilli, but the first and all subsequent sputum and gastric cultures were positive for tubercle bacilli.

believe the following questions are open for discussion: Could this study have been carried out in the private physician's or specialist's office? Should the patient have been given the original diagnosis with its emotional, social, economic and epidemiological implications?

Case 2.—O. R., (No. 7028) a twenty-eight-year-old woman, first noticed a persistent, dry cough in December, 1937. She was pregnant at the time, and in March, 1938, was delivered of a normal infant. At her routine postpartum examination she again complained of a cough. Her physician made a diagnosis of bronchitis and treated her for it without improvement. A single tuberculin test in May, 1938, was negative. In June, 1938, the cough increased. She developed expectoration, anorexia, weight loss, malaise. A chest x-ray was interpreted "pulmonary tuberculosis." A second tuberculin test was positive. One sputum examination was negative.

She was admitted to Glen Lake Sanatorium. There was no history of exposure. Her husband and four children were examined for tuberculosis. Additional history revealed attacks of coughing and wheezing prior to the present illness. Her temperature reached a high of 102° and her pulse 110. The physician's examination at the time of her admission revealed impaired resonance in the upper half of the right lung and over the left lung field. Bronchovesicular breath sounds and increased whispered voice sounds were heard over the left lung field. In addition râles were heard over the fourth and eighth dorsal interspaces posteriorly on the left. An x-ray (Fig. 2a) was interpreted as follows: "Far advanced pulmonary tuberculosis over the entire left lung and middle part of the right lung with bilateral cavitation."

Tuberculin tests done with PPD were negative to all strengths. Fifteen sputum smear examinations were negative. Guinea pig inoculation of sputum was negative, as were stool and gastric cultures. Blood hemoglobin was 78 per cent; the white blood cell count was 12,400, with 54 per cent polymorphonuclear neutrophiles, 28 per cent lymphocytes, 5 per cent monocytes, and 17.5 per cent eosinophiles. Subsequent blood examinations revealed a variation of eosinophiles from 7.5 to 16 per cent. Serial x-rays showed rapid improvement (Fig. 2b). She was discharged in November, 1938, with a final diagnosis of allergic pneumonitis or "subacute Loeffler's syndrome."

The questions which were asked at the end of the previous case might well be repeated here.

Case 3.—H. J., a fifty-three-year-old man, was laid off from his job in a foundry in 1941. He had a "spot on his lung." He went to his private physician who made an x-ray and told him he had "healed childhood tuberculosis" (Fig. 3a). He could not regain his job at the foundry, so he obtained a job as a painter and worked until March, 1943, when a second x-ray was taken (Fig. 3b) with an interpretation of "no change, healed childhood tuberculosis."

In March, 1947, he had chest pains and expectoration. He felt very tired. He returned to the same physician for a third x-ray (Fig. 3c) which was interpreted as "reactivation of childhood tuberculosis." Application was made to the sanatorium, but the patient refused the physician's advice and went to a second physician. There he was given a diagnosis of far advanced tuberculosis. No sputum examinations were made.

He was referred to the out-patient department for study. Ten sputum smears over a two-week period were all negative. On April 15 at his first clinic appointment, a gastric wash was done and a second sputum smear was made. Both the sputum and the gastric washing were cultured. All subsequent gastric washings and sputa were cultured. On May 27 the first sputum and gastric cultures were both reported positive for tubercle bacilli. He was admitted to the sanatorium for treatment.

One might ask the questions: "Should a bacteriological study have been done in 1941?" "What would have been the result?" "If repeated in 1943, what would have been the result?" "Should the patient have gone from December, 1943, to March, 1947, without follow-up studies?" "Should we ever be satisfied when a smear is negative?" This patient had fifteen smears; of these the first two cultures were positive within four weeks.

The x-ray is a valuable tool in the diagnosis of tuberculosis. Unless, however, it is complemented by clinical and other laboratory studies, it may be hazardous to the individual and the community. I believe Dr. Rigler expresses a somewhat similar opinion in his handbook on *The Chest*. "Next to positive sputum characteristics, x-ray findings are the most definite evidence of the presence of pulmonary tuberculosis. X-ray signs of pulmonary tuberculosis do not necessarily indicate activity or quiescence of a lesion. In some cases the activity can be determined, but in many it is impossible to decide on the stability of a lesion unless repeated studies are made." As our experience with mass radiography increases, and as more and more competent laboratories intensify their search for tubercle bacilli, we realize that a lesion may be stable on x-ray for one year or more and still yield positive culture and other laboratory and clinical evidence of activity.

I would like to close the discussion on x-ray as a diagnostic technique with a quotation by Dr. J. A. Myers from *The Evolution of Tuberculosis—1921 to 1941*. "We must remember that we are inspecting only shadows of gross pathology and that shadows of tuberculous lesions may appear identical with those of other diseases that attack the lungs. Therefore, we have long since discontinued attempts to make so-called x-ray diagnoses, as it is a physical impossibility to determine whether a given shadow represents disease produced by tubercle bacilli or by any one of several micro-organisms, as well as by malignancy."

If only one criterion must be used to make a diagnosis of tuberculosis, the physician can do no better than to use bacteriological evidence. This is difficult, time-consuming, and not too satisfying to both physician and patient, who live in an age of speed. However, if one has available a competent laboratory, this method will be the most accurate. It will conserve community resources; it will provide the information needed for modern treatment and intelligent epidemiological control.

TABLE I. POSITIVE GASTRIC WASH VERSUS POSITIVE SPUTUM

Type of Patient	Number and Per Cent of Patients	Number and Per Cent of Examinations	Number and Per Cent Positive
No sputum	71 (15.3)	401 (14.0)	211 (52.6)
Negative sputum	111 (23.9)	783 (27.3)	314 (40.2)
Positive sputum	282 (60.8)	1682 (58.7)	746 (44.3)

Feld, in Am. Rev. Tuberc.: 7.5 per cent of positive gastrics become sputum positive within six months.

What can we expect from bacteriological diagnosis with a good laboratory? What studies should the physician request? How should these be integrated with the other diagnostic studies on his patient?

Feld studied intensively 868 adults admitted to the sanatorium with x-ray diagnosis of tuberculosis. In 464 of them, he was able to make a bacteriological diagnosis. He believes that he obtained bacteriological evidence on all patients with active tuberculosis. He performed from one to thirty bacteriological studies per patient depending on clinical indications. He states that 60 per cent can be diagnosed by sputum cultures alone, 24 per cent have a negative sputum but become positive with gastric culture, and 15 per cent have no sputum but gastric culture is positive (Table I).

There is some question about the 23 per cent with negative sputum and positive gastric culture. Hilleboe and Holm suggest that in the presence of sputum a gastric culture is not necessary. Feld's figure, 24 per cent negative sputum and positive gastric culture, would be smaller, I believe, if the clinician made sure that sputum came from the lungs and not from the sinuses. If there is doubt in the clinician's mind as to source of sputum, a gastric wash should be requested. A gastric wash is indispensable in children.

The physician may ask immediately, "How many sputum and gastric studies shall I do before I decide the patient is inactive or at least sputum-negative?" Serial x-ray will help in deciding whether a lesion is progressing or regressing. If there is progression and, especially in the presence of cavity, expectoration, and if continued sputum cultures in competent laboratories re-

TABLE II. STUDY OF CONSECUTIVE ASPIRATIONS

Aspirations	Number of Patients	Per Cent Positive
1	292	71.1
2	378	92.0
3	395	96.1
4	406	98.8
5	411	100.0

main negative, the physician must intensify his study for a non-tuberculous etiology.

Pinner says, "I have found it a practical working rule but not an iron-clad law to state that a patient with more than a minimal lesion, with evidence of activity and with reasonable amount of sputum, has probably not pulmonary tuberculosis if, on complete studies of frequent sputum and gastric samples, tubercle bacilli cannot be demonstrated."

If there is no sputum, what can we expect from gastric culture? Feld again gives some practical suggestions as to what may be expected from a gastric lavage. He found that one gastric aspiration yielded 71 per cent of those which would ultimately be positive, a second, 92 per cent, and so on, until a fifth would yield 100 per cent. (Table II). Unfortunately, he does not give a time interval between studies.

These studies agree basically with very intensive studies by Dr. Holm and his co-workers of Denmark. Dr. Holm gives a little additional information in a personal communication, from which I quote: "A smear will reveal about 20 per cent bacteriologically positive cases of tuberculosis, sputum cultures an additional 40 per cent, gastric cultures the last 40 per cent."

These figures give some idea of what has been done in competent laboratories. What can be done in each physician's laboratory will depend on the number of culture tubes used per specimen, the type of media used, the care with which culture material is prepared for culture, the care with which it is collected, and, as Glen Lake repeatedly points out, how promptly it is sent to the laboratory. By no means of least importance is the experience of the bacteriologist in culturing tubercle bacilli. This list of variables does not exhaust the factors which must be considered in determining dependability of culture work in tuberculosis.

The tuberculin test is another diagnostic aid in the differential diagnosis of tuberculosis. There is no test in the field of medicine that has been more extensively used and the results so carefully checked by post-mortem examination as the tuberculin test.

I would like to discuss some significant aspects of tuberculin sensitivity. I will refer specifically to Florence Siebert's preparation of PPD at the Phipps Institute. However, in its application as a diagnostic tool, the principles apply as well to intracutaneous testing with other PPD preparations and accepted preparations of Old Tuberculin. Intensive studies with this specific preparation probably represent the general pattern of tuberculin sensitivity.

It is evident that the quantitative titration of tuberculin sensitivity by the use of different concentrations yields information which throws considerable light on the diagnostic interpretation of the reaction. When the tuberculin sensitivity of each individual making up a population group is known, it is possible to construct a curve of tuberculin sensitivity for that group. When the same tuberculin solution and testing techniques are used throughout, it is possible to compare all curves of tuberculin sensitivity of various population groups. Such studies have been carried out by the U. S. Public Health Service and others. From such studies it is apparent that almost all persons tested react to tuberculin if large enough doses are injected and that certain persons react to very small doses of tuberculin. In the main, those groups who react to large doses of tuberculin only are among those with non-contact histories. Conversely, the majority of those who react to very small doses either have tuberculosis or a history of contact with it. Thus the non-contact group is relatively insensitive to tuberculin, while the contact group is highly sensitive.

Dr. Palmer points out that the sensitivity curves of a group, all of whose members have a history of contact or actual tuberculosis, differ markedly from those having no contact history. The difference is primarily that there is a greater percentage of reactors to smaller test doses. It is significant that not all children, even though proven contacts of open tuberculosis, are reactors. In two large groups tested, only 79 and 76 per cent reacted. Three possible explanations of this failure of persons with a history of contact to react to small doses of tuberculin must be considered.

1. These persons have been infected with the tubercle bacilli and have not yet become hypersensitive. Dr. J. A. Myers and his staff at the

Lymanhurst Clinic in Minneapolis showed that it takes from three to seven weeks for sensitivity to develop to a degree detectable by the tuberculin test. Having once become hypersensitive to tuberculin, they have subsequently become anergic.

2. Although they had lived in contact with open tuberculosis, they have not been infected.

3. Contact may have taken place with inactive tuberculosis.

The exact significance of skin reactions which are obtained only through large doses of tuberculin is not clear. There are reasons, however, which make it appear likely that these reactions are not specific, or in other words, they are not due to infection with the tubercle bacillus. In the first place, since almost everyone reacts if a large enough dose is used, it would have to be assumed that almost all persons tested have been infected with tubercle bacillus. Such an assumption seems unwarranted. In the second place, the character of the reactions to the larger doses of tuberculin is less stable over a period of time than that of the reactions to the smaller doses. It appears likely, therefore, that reactions occurring with large doses of tuberculin are not specific. This may be even more true when O.T. is used, which has, in addition to protein, a polysaccharide and nucleic acid constituent. It becomes important, therefore, to determine if possible at what dose of tuberculin the nonspecific character becomes evident. The U. S. Public Health Service is now recommending a one-dose technique using .0001 mg. PPD. As you will see later, with this as a first test dose, very little tuberculosis will be missed by omitting the second test dose. Dr. Palmer believes that the one test dose will pick up all significant tuberculosis and will not exclude significant tuberculosis. If we could eliminate a second dose and lose very little in diagnostic value, it would be very advantageous in case finding and clinic procedures. This suggestion needs careful clinical evaluation.

In Dr. Palmer's experience with over 500 cases of tuberculosis, more than 99 per cent reacted to .0001 mg. PPD. This dose is five times more concentrated than the N.T.A. first testing dose. Similar findings are reported by Long on 609 tuberculosis cases at the Phipps Institute. He reported that 94 per cent of the white and 96 per cent of the colored tuberculosis patients reacted to first testing strength of the PPD or O.T. After larger doses are used it should be with the realization that they may invoke nonspecific reactions and that such reactions occur with increasing frequency as the dosage is increased (Fig. 4).

What is a non-reactor, and what is a reactor? At the present time the N.T.A. is recommending the two-dose method of tuberculin testing. The first dose is .00002 mg. of PPD, and if the person is a non-reactor, a second dose of .005 mg. of PPD is given. The test should be read preferably at the end of a seventy-two-hour period but can be read in forty-eight hours. The reaction is indicated by an area of edema in the skin at the site of administration. This area should be at least 5 mm. in diameter for the first test dose, and 10 mm. for the second. In interpreting the tuberculin test, it is far better to use the sense of touch than the sense of sight.

I should like to summarize the use of the tuberculin test in diagnosis as follows: The tuberculin test, if properly used, will tell whether infection has taken place. If it is applied repeatedly, and if the activity of the product has been established, a non-reactor either does not have tuberculosis, is in the preallergic or the terminal stages of disease, or has lost his sensitivity. In the latter case there are no living organisms left in the body. If an x-ray pulmonary lesion is present in a non-reactor at the end of eight weeks, the lesion should be considered non-tuberculous.

The fourth and last diagnostic aid which I should like to discuss briefly is the history and physical examination. It perhaps is the oldest of the four diagnostic techniques discussed today. It has been discredited by some recently. They have suggested throwing the stethoscope away; early tuberculosis is symptomless and signless. That early tuberculosis is symptomless and signless in a majority of instances is very true. If we knew that patients who come to us from mass surveys had tuberculosis, we could throw away not only the stethoscope but all other diagnostic aids. But we don't know what these patients have. We don't know they are signless and the only way to find out is to do a physical examination and find out. In the differential diagnosis of tuberculosis there are many diseases which look like tuberculosis roentgenogically but actually may be other infections or malignancies which do cause physical findings, such as palpable nodes and fever. A rectal examination or abdominal palpation may reveal the primary focus of what looks like tuberculosis in the chest. A history of significant

contact with an open case, closed case, or terminal case, if present, strengthens the evidence for tuberculosis.

The history especially has far-reaching diagplosive implications. The chips are all down; the patient holds low cards. If the patient has tuberculosis, then, according to Plunkett, who has made a study of costs, the physician is about to

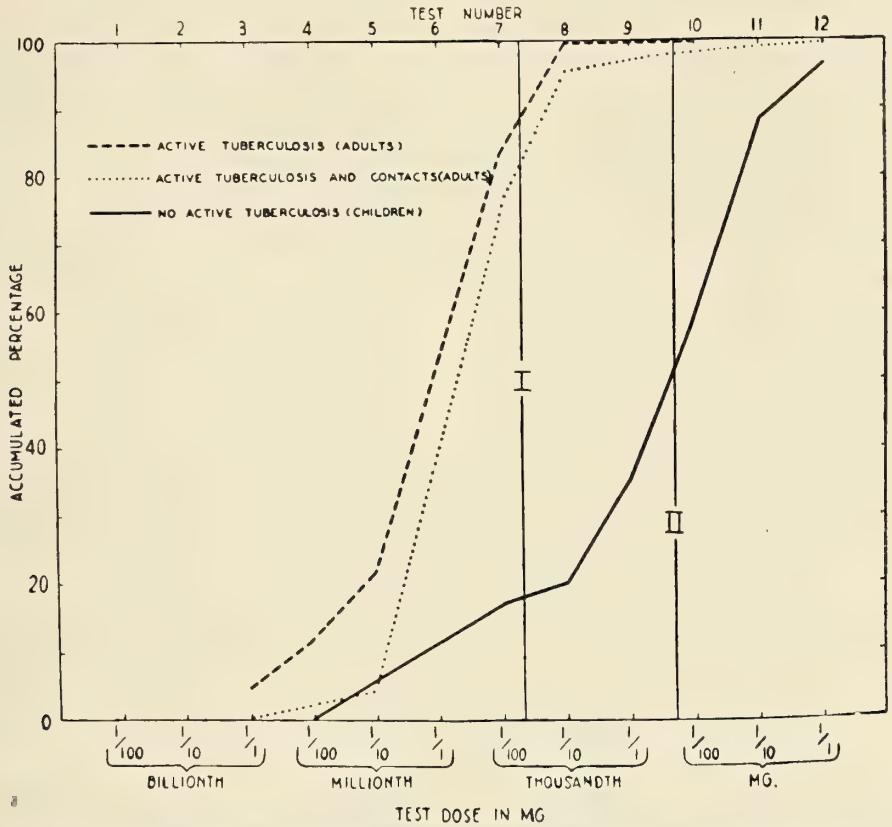


Fig. 4. Accumulated percentage of positive reactors to various test doses of PPD among 468 adults with active tuberculosis and 553 orphanage children with no apparent active tuberculosis. The vertical markings I and II represent the approximate levels of the first (0.00002 mg.) and second (0.005 mg.) strength doses of PPD as usually recommended.

nostic value and cannot be too detailed. No matter how diplomatic the letter which referred the patient from the mass survey to the physician, many patients are frightened at first. Later, after the first shock of "something wrong with my lungs" has been dissipated, they will throw up a protective barrier of "I'm not sick," or "I've never felt better in my life." They are only too eager to hear that nothing is wrong. The physician must use great caution to establish in the patient a delicate balance between a healthy respect for the possibilities behind a positive x-ray and at the same time help him face his anxiety. Here the physician goes from the objective aspects of medicine to the art of medicine.

The first clinic visit of a patient referred from a mass chest x-ray survey is loaded with expresent him with a bill for $10,000. That is the average cost in lost wages and medical expenses between diagnosis and end of treatment or death. But the physician is going to do even more than that. He will suggest segregating the patient from his family. This, of course, has profound sociological and biological implications. The latter are often responsible for the patient's failure to accept "the cure" or for not taking it well. This first clinic visit may determine whether the patient will accept the physician's recommendations at all, or whether he will continue to spread disease to the community and, if early treatment has value, throw away his best chances for future health. A careful history, and time to get acquainted with the patient and his problems, will make follow-up with community funds less

costly. A physician who makes disposition of a patient with an intrathoracic lesion needs all the information obtainable through the most meticulous history and physical.

By using four diagnostic aids in making a diagnosis of tuberculosis, or in ruling it out, the physician cannot go far wrong: first, x-ray examination and competent interpretation; second, competent and persistent bacteriological study; third, the tuberculin test; and fourth, a careful and detailed history and physical. A diagnosis of tuberculosis based on these criteria, or ruled out through them, is based on scientific fact. It protects the community and the patient. It will not needlessly disrupt the sociological, economic and biological needs of the patient and his family.

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NEEDLESS DIPHTHERIA DEATHS

No matter how wonderful the discoveries of medical science, they are of no practical value unless applied. Neglect to make full use of preventive measures against diphtheria is proved by the fact that in 1946, there were 121 more deaths from this disease in the United States than in the record year of 1941. The *Journal of the American Medical Association* (Vol. 134, p. 1540) has gathered statistics from nearly a hundred cities of the deaths from diphtheria in 1946. Thirty-one municipalities had a perfect record. In ten more, the mortality was exclusively among nonresidents. Children who live in rural districts where immunization is not thorough are often taken to city hospitals if they become sick. Twenty-seven cities had no diphtheria or typhoid mortality in the year, seven others none of residents. Fourteen New England cities had four times as many diphtheria deaths as in the previous year. Boston had twenty-two, as against one each year in 1942 and 1943. It is clear that infants and preschool children should receive their protective treatments and protective boosters on entering school, and later in life when conditions indicate this is desirable.—*Good Health,* November, 1947.

EVALUATION OF ANTICOAGULANT THERAPY IN DEEP VENOUS THROMBOSIS OF THE LOWER EXTREMITIES

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THE high incidence of spontaneous thrombosis in the cerebral and coronary vessels needs little emphasis. The frequency of spontaneous thrombosis in the deep leg veins, however, has not been generally appreciated until recently. Hunter found such thromboses in 44 per cent of routine autopsies, usually primary in the calf and extending to the femoral only secondarily. The frequency was higher in medical than in surgical autopsies.

Diagnosis

Little time can be spared for discussion of diagnosis. Hot thrombophlebitis, with fever, leukocytosis, local heat, swelling, tenderness, and positive Homan's sign, lies at one extreme; bland thrombus formation or phlebothrombosis, with few signs—perhaps a pulse rise, slight soreness, or swelling—and with frequent early embolism, lies at the other. Any given case can lie anywhere in the range between.

Incidence

Barker and E. V. Allen, at the Mayo Clinic, estimate venous thrombosis to occur in 1 per cent of surgical patients, and fatal embolism to occur in one in five of these if specific therapy is omitted. In some groups, those with sepsis, those having pelvic operations, and particularly those with ulcerative colitis, the incidence is far higher.

Methods of Therapy

Various methods of therapy have been exploited:

1. Expectant therapy has been abandoned because of high immediate risk, five to six weeks of immobilization, and high incidence of permanent pain and edema.

2. Lumbar novocaine block of Le Riche and Ochsner is occasionally spectacularly successful but not regularly so. The University Hospital staff has almost abandoned it, primarily because of two fatal emboli immediately following injection.

3. Paine and Levitt found some benefit to follow intermittent venous occlusion.

4. Pendergass and Hodes found some decrease in edema to follow x-ray therapy.

5. Day found use of snug bandages and early walking effective. No experience with this therapy has been had at the University.

6. Fine, A. W. Allen, and others have advocated superficial femoral vein ligation in the prevention of emboli, and present very convincing figures. Veal and Hussey, and others, even tie the vena cava for many cases. The common femoral should not be ligated.[6]

7. Anticoagulant therapy employs heparin, first introduced as a therapeutic agent by Murray in 1938, and championed by many,[2,3,4,9,11] and dicumarol, isolated at the University of Wisconsin, and employed vigorously in clinical cases by Barker, E. V. Allen, and their associates at the Mayo Clinic.

Experience with Phlebitis

In association with Drs. H. P. Berge, W. P. Eder, and Kenneth Lister at the Minneapolis General Hospital, and with Drs. Davitt Felder, Ivan Baronofsky and George Moore at the University Hospitals, I have had an opportunity to evaluate several of these methods of therapy in the past few years. It soon became apparent that the choice to be made was primarily between the use of ligation and the use of anticoagulants.

Because there seem to be no reports in the literature on unbiased evaluation of these two modes of therapy, an effort was made to do so. A general plan was laid out, cases in 1945 being treated primarily by blocks and ligations at the University and primarily by dicumarol at the General; the modes of therapy were to be switched at the beginning of 1946 at each hospital. Unfortunately, I did not have control of all the cases, and numerous aberrations from the plan occurred, but the information obtained represents an honest effort to make the most of each type of therapy.

From the Department of Surgery, University of Minnesota Hospitals, and the Department of Surgery, Minneapolis General Hospital. Supported by a research grant from the Graduate School of the University of Minnesota.

Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 1, 1947.

TABLE I. EXPERIENCE WITH THROMBOPHLEBITIS

	Minneapolis General	University	Total
Anticoagulants alone	27	65	92[1, 2]
Deaths	0	1[3]	1
Total femoral ligations	6	10	16[4]
Ligations alone	2	7	9
Deaths	1	1	2[5]
Ligation-dicumarol	4	3	7
Deaths	0	0	0

[1] Only three of seventy-six pateints followed had late pain or edema.
[2] Four patients had hematuria, which was disregarded; two patients had serious hemorrhage which stopped treatment, both are well.
[3] Inadequate heparin because of general sepsis and hemorrhagic diathesis; died of embolus.
[4] Four of twelve patients followed had late pain and/or edema.
[5] Emboli after ligation. One other patient developed hot thrombophlebitis three days after bilateral ligation for other side.

Mechanism

The mechanism of intravascular clotting is essentially as indicated in Figure 1. Thromboplastin is not normally free in plasma, but is released following agglutination of platelets. The result is a combination of calcium ion and prothrombin, both normally free in plasma, to form thrombin, which in turn combines with fibrinogen to form fibrin. Heparin interferes with at least two of these processes, possibly all. Dicumarol, on the other hand, lowers the prothrombin blood level by blocking production in the liver.

Employment of these drugs in phlebothrombosis is effective because it prevents propaga-

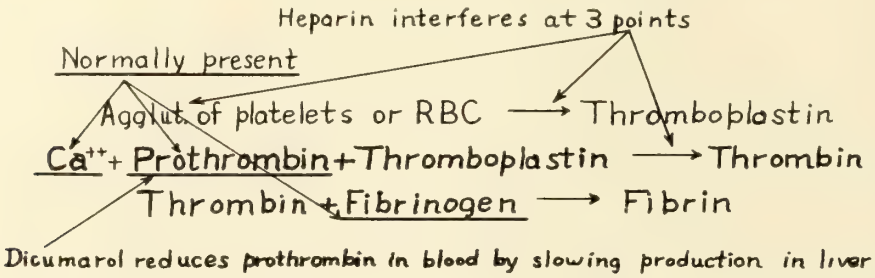


Fig. 1. Probable mechanism of intravascular clotting.

Blocks were disappointing and are omitted from this presentation. In the past year the anticoagulant therapy at the University Hospitals has been taken over by Dr. Davitt Felder, who has performed a superlative study on which he will report fully at a later date.

Table I indicates the combined experience. Of ninety-two patients given anticoagulant therapy alone, one death occurred. In this instance generalized sepsis and a marked hemorrhagic diathesis combined to make ligation impossible and anticoagulant therapy inadequately applicable; she died of embolus. Of these ninety-two patients, seventy-six have been followed; only three have late pain or significant edema. Two of these ninety-two cases suffered severe hemorrhage requiring cessation of therapy. Both are well today. Review of the occurrence of two fatal emboli after ligation, and the occurrence of hot thrombophlebitis in one patient three days after ligation of the superficial femoral vein, together with the high incidence of late symptoms, led all of us to be all the more impressed with the good record achieved with anticoagulants.

tion of the clot and blocking of venous and lymphatic collaterals. It is apparently only freshly formed clot which embolizes, and adequate anticoagulant therapy for three or four days allows the already formed thrombus to become firmly anchored without fresh clot formation; therefore full activity can then be allowed with little risk.

Plan of Use

In uncomplicated cases of venous thrombosis the combined experience has led to the use of dicumarol alone. As indicated in Figure 2, the usual plan is to give 300 mg. orally the first day and 200 mg. the second. Therapy thereafter is guided by prothrombin time determination daily, the value of which is the indication for each day's dose. The therapeutic range of prothrombin time is two and a half to three and a half times the value of the control from a normal person, which must be run with every batch of determinations because of the unavoidable variations in the thromboplastin which is added. Usually the therapeutic range is reached in about three days and the dosage required is about 100 mg. daily. Because of the lag in effect, the direction of the

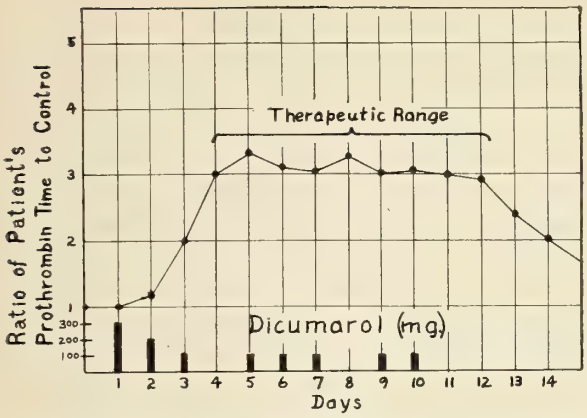


Fig. 2. Example of response of prothrombin time to dicumarol. Wide variations occur and daily prothrombin time determinations are essential.

curve as well as the absolute value must be used as a guide in dosage. Return of readings to normal requires five to fifteen days after cessation of therapy.

Hemorrhage is a serious complication, and may be concealed. Blood transfusion supplies enough prothrombin to bring the prothrombin time down to almost normal for eight to ten hours, but 60 mg. of synthetic vitamin K must be given at the time of transfusion to keep the level down. It is well to repeat this latter in another twelve hours. Minimal microscopic hematuria does not necessitate cessation of therapy.

For best results, patients are kept in bed until symptoms have disappeared, and therapeutic levels are maintained four to five days after ambulation begins.

In such acute emergencies as pulmonary emboli and rapidly spreading femoral thrombosis, the experience mentioned has led to the conclusion that heparin should be given intravenously, because of the quick response, until therapeutic levels of prothrombin time elevation have been reached with dicumarol. Continuous intravenous heparin drip infusion has been found too difficult to control and therefore dangerous. Preferable is intravenous injection of 30 to 50 mg. every three hours, the dose being adjusted to raise the capillary clotting time to 20 to 25 minutes at one hour after each injection. One or two clotting time determinations per day suffice. Clotting times are found to return approximately to normal before each injection.

Discussion

In general, the employment of dicumarol must be restricted to areas served by good laboratories where well-trained technicians are on hand for daily determinations. Prothrombin time determination is treacherous and not to be relied upon in the hands of a novice, and variations in response to dicumarol, and strength of different batches of the drug, make laboratory control absolutely imperative.

In areas not served by such a laboratory, heparin therapy on the plan indicated may be employed throughout the necessary period of therapy, usually running seven to fourteen days.

Prophylactic Use of Anticoagulants

My personal experience with the prophylactic use of dicumarol in patients undergoing ileostomy for chronic ulcerative colitis confirms the findings of Allen and his associates. In this disease 25 to 30 per cent develop venous thrombosis postoperatively in the absence of specific therapy. In the last twenty cases, only three patients did not have 100 to 300 mg. of dicumarol the night before operation; these three died of pulmonary embolism; all others recovered without evidence of venous thrombosis.

Conclusion

Combined experience at the Minneapolis General Hospital and at the University of Minnesota Hospitals indicates that anticoagulant therapy is more effective than other measures in the management of deep venous thrombosis in the legs.

The general plan of therapy is presented.

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(Continued on Page 65)

EARLY POSTOPERATIVE AMBULATION

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EARLY postoperative ambulation is designed to maintain normal physiologic functions of the body after surgical treatment. The procedure denotes activity starting in the first six to twenty-four hours after operation, encouraging the patient to be up and about with continuation of normal physiological processes.

Prolonged postoperative bed rest exaggerates undesirable physiological changes, thereby increasing the possibility of critical complications during convalescence. The changes are caused by mechanical and nervous factors affecting the respiratory, circulatory, gastrointestinal and genitourinary systems. Prolonged bed rest produces pulmonary complications in 2 to 4 per cent of all surgical patients. Fifty per cent of such complications occur within the first twenty-four hours and 75 per cent within the first forty-eight hours after operation. Circulatory complications such as thrombophlebitis and pulmonary embolism occur in from 1 to 4 per cent of all surgical procedures. Approximately 25 per cent of surgical patients confined to bed have urinary retention and constipation.

Present-day surgical gentleness and skill combined with excellent anesthetic facilities permit handling and revision of various anatomical systems without effect on the rest of the body. Continuance of normal function of the remaining organism is maintained. Activity of the entire organism is conducive to adequate pulmonary ventilation. Atelectasis is further prevented by persistent cough activity and the coincident increased venous return produced by negative pressure within the thorax. Early activity maintains cardiac output with attendant good arterial supply and associated venous return insuring oxygenation of all parts. Thus, there is a complete avoidance of general and special tissue anoxemia due to venous and arterial stasis.

The procedure maintains function of the gastrointestinal system, unless continuity has been disrupted. Ingestion of fluids and regular diet produces a solid food bolus which continues normal forward propulsive intestinal peristalsis, thus eliminating collections of gas, abdominal distention and the necessity for catharsis or enema. Full activity of the genitourinary system is provided (inactivity of which seems to be related to dysfunction of the central nervous system in many instances), thus reducing or eliminating the need for catheterization and the frequent complication of urinary cystitis.

Activity of the central nervous system with good co-ordination thereof and improved general physiological function of the body is assured. Delay of institution of activity because of spinal anesthesia has long ago proved unnecessary, in that such activity need be delayed only long enough to permit resumption of function of the lower extremities.

The only hazard of early postoperative ambulation is disruption of an operative wound. If the wound has been properly secured by gentle, complete, smooth apposition without traction, disruption of the wound in an ambulatory patient is no more frequent than in a bed patient. Poor wound apposition produces frequent disruption, whether the patient be in bed or active, and without regard to closure material. Disruption of a wound is usually predictable because of known malnutrition or inadequate closure. Prevention of disruption of abdominal wounds may be aided by primary reinforcement of all questionable wounds at the time of repair. Such wounds should not be subjected to early postoperative ambulation.

Limitations of the procedure must be recognized, and use of the method must be tempered with adequate judgment. It is evident that the procedure cannot be patternized but must be fitted to each individual case. Nevertheless it is suited for the clean, uncomplicated case. The individual seriously injured by chemical, bacterial, or traumatic agents, still requires the basic therapy of complete rest with controlled physiology, chemotherapy, et cetera, and is not amenable to early ambulation. Thus, the latter must take the additional risk incident to prolonged bed rest.

Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 1, 1947.

Method of Ambulation

Postoperative orders concerning early ambulation note the following procedures:

1. "MS gr. 1/6 or 1/4 prn q 4 h for pain." It is noted in all cases of early postoperative ambulation that the number of doses of such medication is greatly reduced and within two to three days proves entirely unnecessary.

2. "Ventilate (CO_2) and cough q 15 minutes x 4—q 1/2 h x 4—q 1 h x 4—then q 2 h." This order is designed to encourage ventilation and hyperexpansion of the pulmonary system, and reduce collections of mucus or mucous plugs. There is a coincident increase of intrapulmonary negative pressure, with aspiration of venous blood through the vena cava and increased venous flow and reduced venous stasis. The latter effect minimizes the production of thrombosis in the large vessels of the lower extremities and the pelvic region, and decreases the number of postoperative embolic phenomena from such thromboses. The order in relation to ventilation includes a secondary order wherein the patient is directed to cough at regular intervals, supporting the abdominal wound with the hand. It is felt that active coughing again minimizes collection of mucus and formation of mucous plugs, decreasing pulmonary atelectasis and collapse.

3. "Move lower extremities and turn from side to back to side q 15 minutes x 4—q 1/2 hr x 4—q 1 h x 4—then q 2 h." This order is intended to facilitate muscular activity of the lower extremities as well as drainage of the venous system by gravity, muscular activity acting as a pumping mechanism to insure venous flow and activity. The turning process is designed to avoid posterior pulmonary congestion or hypostasis, and also permits increased pulmonary ventilation.

4. "Patient to stand (or sit) at bedside to void." This order is designed to encourage the patient to resume weight bearing as soon as possible, and facilitates urination, particularly in male patients, many of whom find it difficult to void while in the supine position.

5. "Encourage full back rest at once." The patient is encouraged to assume a normal sitting posture as soon as his general anesthesia permits. No delay in assuming such position is afforded the patient because of having a spinal anesthesia, as experience has noted that the number of individuals developing a postoperative spinal anesthesia headache is no greater in those who assume activity at once than in those who are placed under a regime of delayed activity and flat in bed position. The patient is ordered up in a chair at the end of twenty-four hours and permitted to move about to the bathroom and as he may desire.

6. "All fluids and a regular diet at once." The function and mechanism of the gastrointestinal tract is carried on as before operation to afford no change in the normal physiology thereof. The exception, of course, is where there has been any profound disruption of the intestinal tract, which necessitates rest thereof during its own healing process.

These orders and procedures are applicable to most patients. Modification of an early ambulation program is necessary for the individual who is psychosomatically unable to adjust to such procedure. Patients should be informed and instructed concerning the conduct of their postoperative treatment when early ambulation is intended.

UNIVERSITY OF TEXAS SPONSORS FIRST MEDICAL DEPARTMENT AFFILIATED UNIT

The University of Texas is the first institution to become a member of the Army Medical Department's Postwar Affiliation Program, Brig. General George E. Armstrong, Deputy Surgeon General, announced recently.

Additional units, both general and evacuation hospitals, from other leading medical schools and hospitals throughout the country will be activated this year.

The professional members of these new hospital units will be drawn from the faculties and staffs of the medical schools and hospitals which sponsor them. The personnel will be trained in Army methods and procedures so that in the event of mobilization these units will be prepared to take the field with the minimum of delay.

In World War II there were seventy-three units, comprising general, evacuation, and portable surgical hospitals, which were brought into the service. These affiliated units make an important contribution to the high standards of medical care given by the Medical Department during the war.

The Medical Branch of the University of Texas sponsored a general hospital—the 127th—in World War II from October, 1943 to September, 1945. The 127th General Hospital performed outstanding service in the European Theatre of Operations.

The school has agreed to sponsor a 1,000 bed general hospital in this postwar program. Dr. Chauncey D. Leake, Vice President of the Medical Branch of the University of Texas, signed the agreement with the Department of The Army. This medical school is located at Galveston, Texas.

HYPERTENSION—MEDICAL TREATMENT

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THE importance of hypertension as a medical problem becomes apparent when it is realized that about 15,000,000 people in the United States have some degree of elevation of the blood pressure.[20] When one reflects upon our lack of understanding of the origin of this disorder and our lack of progress in its treatment, the great magnitude of the problem is again apparent.

In such a widespread disorder as this one, it is natural for the layman to hold certain views concerning it. These have in large part been based upon mortality statistics derived from insurance companies, all of which tend to emphasize the high death rate associated with hypertension. That this is true cannot be denied. However, there is a phase of the prognosis of hypertension which has received little attention; perhaps it does not lend itself easily to statistical analysis. It is the fact known to all physicians that many hypertensive individuals have a favorable outlook for a normal life expectancy, with relatively little impairment in health. This is especially true of women. Our viewpoint on prognosis should acknowledge this brighter side and emphasize it. Perhaps in the future, statistics on this optimistic phase of the prognosis will be available.

Any plan of treatment which is used should be carried out with due regard to certain well-known collateral clinical observations. For instance, it is fundamental to know that individuals with hypertension show marked variations in blood pressure throughout the day. The first reading taken in the doctor's office is almost invariably higher than the second one taken hours later. Consequently, if the effects of treatment are to be assessed, basal before and after levels must be taken. Palmer[12] has reported that transient normal levels are seen in 23 per cent of cases of early benign hypertension, 11 per cent in moderate hypertension, 8 per cent in advanced cases and 8 per cent in malignant cases.

At this point it might be well to say a few words about transient nervous hypertension. This syndrome occurs between the ages of eighteen and fifty, and when present may confound the examiner who wishes to make a decision as to the presence or absence of hypertensive disease. Levy et al[11] studied the military records of many thousands of army officers with this syndrome, and brought forth the conclusion that individuals with transient hypertension are more likely to develop sustained hypertension than those with normal pressures, and, furthermore, if transient tachycardia and overweight were also present, the predisposition was still greater. When one encounters an individual with transient hypertension, he probably should be regarded as a future permanent hypertensive. However, a great deal of harm will be done if the treatment from this standpoint is too vigorous or too dogmatic, for there are a certain number of these individuals—the figure has not yet been determined—who will never develop permanent hypertension, and these may be harmed by ill-considered advice. Rogers and Palmer, in a small group of patients with transient hypertension followed for more than three years, found that half of them still had normal blood pressures. The ultimate prognosis of individuals with transient hypertension in terms of percentage must await further long-range studies. In regard to fluctuating blood pressures, it might also be mentioned that the hyptension seen at the menopause has been shown to have no relation to the hormonal disturbance present.[18]

At the present time, the theory of renal ischemia as a cause of human hypertension lacks convincing proof. Renal disease is a definite causative factor in rare instances, but is not the universal cause of the disorder, and renal ischemia is not obligatory to the hypertensive state. The cause and perpetuating mechanism of essential hypertension is unknown.[15] Obviously no treatment we have at present can act on the cause of the disorder. Our efforts are directed at relieving symptoms as they appear and at reducing the arterial tension which is the most easily measured manifestation of the disease.

Medical treatment will now be considered in terms of psychotherapy, diet and drug therapy.

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Read at the annual meeting of the Minnesota State Medical Association, June 30, 1947, at Duluth, Minnsota.

Psychotherapy

Every physician has observed the fact that emotional and nervous reactions may elevate the blood pressure. Psychotherapy simply consists of helping the individual neutralize or diminish these reactions, and thereby produce a trend toward lower blood pressure levels. This type of therapy is particularly suitable because most hypertensive individuals are burdened with more than their rightful share of nervous reactions.

A study of the personality from the psychologic standpoint has been made by Binger.[3] His results, based on a study of twenty patients, show that "the hypertensive individual has a neurotic personality disorder, manifested in interpersonal relationship, in sexual adjustments and occupational achievements. He is characteristically tense and given to states of anxiety and depression. Much of this emotional tension can be ascribed to inhibited, but not deeply repressed, aggressive impulses." This neurosis, no doubt, explains in part many of the symptoms of the disorder, such as headaches, palpitation, weakness, shortness of breath, dizziness, et cetera, and provides a fertile field for psychologic reorientation. Simple psychotherapy may be very beneficial in relieving symptoms, if skillfully applied; in more profound states the aid of the psychiatrist must be sought. Weiss, a psychiatrist who has treated many of these patients, states that "almost every patient can be benefited by psychotherapy."

Tact is of the essence in handling these patients, and the power of the spoken word must be fully appreciated by the physician. When, after the careful evaluation of repeated readings, it is concluded that hypertension exists, a frank discussion of the subject with the patient should be undertaken immediately. This provides an immediate basis of understanding which will encourage the patient to seek advice from the physician in the future rather than from well-wishing friends. At this interview the prognosis should be discussed, and the patient should be reassured that the living out of a normal life span is possible. The normal variability of blood pressure readings should be explained.

In discussing level of blood pressure, it is wise to avoid absolute figures, but rather to speak of a blood pressure tendency toward elevation or depression. It is also good practice to avoid mentioning medicines which will bring "the blood pressure down"; medicines should be prescribed for the disease as a whole. In order to combat the common fear that high blood pressure will cause arteries to "blow out," it can be stated that healthy arteries will stand a pressure not only of 300 mm. but as high as 2,000 mm. of mercury.[4] Return visits should be encouraged, and actual blood pressure determinations eliminated from as many of these visits as possible.

In addition to the proper psychologic orientation of the patient, the benefits of a sensible regimen of rest and relaxation should be emphasized. Enforced bed rest is seldom necessary. Prolonged bed rest may lead to invalidism even though it results in lowering of the blood pressure, and should be avoided. In regard to exercise, one need only remember that moderate exercise is another way of producing relaxation and easing nervous tension. It also increases the caloric expenditure and therefore may benefit the obese patient.

Diet Therapy

Of various diets proposed for the treatment of hypertension, the reduction diet has the greatest usefulness, for many of these patients are obese. This diet has no permanent or transient effect upon the blood pressure, but by decreasing the body weight it does decrease the strain on the heart, and in this way prevents cardiac failure. The low-salt diet has had time-honored recognition, but its actual vasodepressive effect is doubtful. Recently, Grollman[6] has produced a decrease in blood pressure with a diet of rigid sodium restriction. However, the careful measurement and special processing of food required precludes its general use. The rice diet of Kempner[9,10] has aroused much interest. It is composed mainly of rice, fruit and sugar, with a low sodium and low protein content. This diet is monotonous and unpalatable and has not had widespread acceptance.

Smoking

What advice should be given the patient in regard to smoking? It is well known that smoking causes a decrease in peripheral blood flow and an increase in the blood pressure and heart rate in normal young persons. It has further been found that in young hypertensive individuals and in older hypertensives with vascular disease, there is a trend towards decreased peripheral blood flow with increased heart rate and blood pressure after smoking.[16,17] It would appear, therefore, that smoking cigarettes has a deleterious influence on

the vascular disturbance in the hypertensive individual, and probably should be eliminated.

Drug Therapy

A survey of the use of drugs in the treatment of hypertension merely serves to re-emphasize the fact that a substance, easily administered, with a prolonged hypotensive action and without toxic effect, is yet to be found. Nitrites, iodides, veratrum,[8] kidney extract, hormones and vitamins are of no proved value.[1] The action of Etamon (tetraethyl ammonium chloride), a powerful vasodepressor, is too fleeting and would not seem to qualify as a suitable drug. The results from irradiation of the pituitary gland need further confirmation[13] The sedatives are very useful for the relief of symptoms but their prolonged use should be guarded against. They have no sustained effect on the blood pressure.

Potassium thiocyanate has been used widely in this country since Barker in 1936 introduced a method of blood assay which greatly facilitated the control of dosage. However, even after ten years of extensive trial the value of this drug and the indications for its use are not agreed on.[7] It appears to be effective in lowering the blood pressure and relieving syptoms in hypertension. A sustained fall in blood pressure can be expected in about 43 per cent of the patients to whom it is administered and complete symptomatic relief in 50 per cent.[2,5,19] It is especially beneficial in relieving severe headaches and dizziness. A disadvantage of thiocyanate therapy is the close observation of the patient which is necessary in order that the dosage and blood concentration be kept satisfactory. This requires repeated venous blood determinations throughout the course of treatment. Mild toxic effects occur in 20 per cent of the patients but usually do not require discontinuance of the drug. The dosage varies considerably in different individuals. The drug is contraindicated in renal insufficiency, extensive cardiac or cerebrovascular arteriosclerosis and in malignant hypertension. It does not relieve the anginal syndrome or exertional dyspnea seen in hypertension. It also appears to have no effect in retarding the atherosclerotic process or in diminishing the organic failure resulting therefrom.

Two methods of administration are used. White[21] recommends beginning with 3 grains daily, checking the blood level at the end of two weeks, then increasing the dose by 1 to 3 grains daily, until a satisfactory fall in blood pressure occurs. At this point a maintenance dose is established. The patient must, of course, be continuously observed for toxic effects. He has found that good results occur with blood levels as low as 4 to 7 mg. per cent and with doses as varied as 3 to even 15 grains daily. If a two months' trial is not effective, the therapy should be discontinued. Hines[7] advises an initial daily dose of 12 grains and subsequent dosage adjusted to maintain a blood level of 8 to 12 mg. per cent. His maintenance dose usually varies between 6 and 9 grains. A concentration test should be made every week until a maintenance dose is determined. Even on a maintenance dose, the level should be determined every two or three months. This drug is most suitable for use in patients below the age of fifty with little or no evidence of arteriosclerosis, and with symptoms, especially severe headaches.

Finally, a word about the patient in the geriatric age. The patient over sixty with hypertension but little focal arteriosclerosis and minimal symptoms is in a very favorable position. He needs no treatment whatever for his hypertension. Many fall into this group. Most individuals, however, are not so fortunate and have some degree of arteriosclerotic organ involvement by this time. We can do relatively little to head off impending cerebrovascular or renal failure, but by periodic attention to cardiac function, early heart failure can be recognized and effectively treated with digitalis and diuretics.

In summary, the medical management of hypertension involves, in order of importance, the use of psychotherapy, drugs and diet. It is essentially a conservative treatment in view of the unknown pathogenesis of the disorder. Our aim should be to treat the patient and the disease as a whole, not just the blood pressure level.

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HYPERTENSION—SURGICAL TREATMENT

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A NUMBER of considerations have stimulated renewed interest in the treatment of essential hypertension by means of operations on the sympathetic nervous system. Chief among these has been a growing awareness of the prominent role played by hypertension as a cause of invalidism and death. Hypertension is being recognized as a killer even more malignant than cancer. The discovery of numbers of men with hypertension in the armed services has focused attention on the problem of the treatment of hypertension in young adults. Medical measures of treatment have proved inadequate and impractical in many cases. The hoped-for anti-pressor substance is not vet available, and regimens emphasizing rest and inactivity are not accepted by many patients. Finally, the development of more effective surgical techniques has given new hope to those hypertensives falling within their scope.

Surgical Techniques

The surgical treatment of essential hypertension is based upon the assumption that vasoconstriction of neurogenic origin is an important factor in the production and maintenance of the elevated blood pressure. The object of surgery is to denervate a large portion of the vascular bed, particularly in the splanchnic area, together with the kidneys and adrenal glands.

A member of this society, Dr. Adson, enjoys the distinction of being the first surgeon to attack this problem. In 1925 he and Rowntree reported the case of a patient upon whom bilateral removal of the lumbar sympathetic trunks was performed in an unsuccessful effort to relieve malignant hypertension. Believing that a more complete denervation was required to produce a satisfactory result, Adson subsequently carried out a more extensive procedure, the sectioning of the anterior (motor) spinal nerve roots from the sixth thoracic to the second lumbar levels. This operation required an extensive laminectomy and carried a definite risk of spinal cord trauma. For this reason it was eventually abandoned, but not before it had been conclusively demonstrated that the blood pressure could be significantly and permanently lowered in cases of severe hypertension, and that such lowering of the blood pressure was not, as some had postulated, harmful to the patient.

Following the suggestions of Italian surgeons, the next attack was upon the splanchnic nerves and the adjacent portions of the sympathetic trunk. Craig and Adson removed these structures just below the diaphragm through a retroperitoneal exposure. This operation was relatively simple of performance and carried an amazingly low mortality. However, its results were disappointing except in mild cases, and it was gradually abandoned.

Peet (1933) at the University of Michigan removed segments of the splanchnic nerves and sympathetic trunks just above the diaphragm, gaining exposure by removal of portions of the eleventh ribs. This operation, which has now been performed on over 1,500 patients in Peet's clinic alone, carried a somewhat greater risk than the Craig-Adson operation, but it was also more effective.

In an effort to achieve a still larger percentage of favorable results, Smithwick (1938) devised a more extensive operation which was essentially a combination of the Craig-Adson and the Peet techniques. Through an incision extending from above the tenth rib into the flank, the splanchnic nerves are removed from the ninth thoracic level to their termination in the celiac ganglion, and the sympathetic trunk is removed from the ninth thoracic to the second lumbar levels. The procedure is carried out bilaterally, at an interval of about eight to ten days. This thoraco-lumbar sympathectomy is at present the standard operative procedure employed in the treatment of hypertension. It is more effective than the less extensive operations, yet it has a mortality in expert hands of only about 1 per cent (case mortality 2 per cent). It does have a not insignificant morbidity, however, as approximately a month's hospitalization is required for preoperative tests and the two operations, and postoperative discomfort from nerve irritation is considerable in many patients.

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Even more extensive sympathectomies have been carried out by Grimson (1941) and Poppen (1942). It is not yet apparent if they yield results which are sufficiently superior to justify the additional risk and effort which they entail.

Results of Operation

It has been a common observation that the result of operation in an individual case is difficult to predict and subject to wide variation. Only by the study of large groups of cases followed for several years postoperatively, and a comparison of their course with that of similar groups of patients treated medically, can a true estimate of the worth of these operations be obtained. Fortunately, a number of such reports by both medical and surgical observers are available, some of them extending over as long a follow-up period as twelve years. The reader is referred to the original papers for statistical details. Comparisons between the reports of different authors is difficult because of the varying standards adopted for the selection of cases for operation and for the evaluation of results. It is clear from a study of these reports, however, that while surgery is seldom to be regarded as a cure for hypertension, it does yield results for certain groups of patients which are decidedly superior to those produced by medical treatment.

The beneficial results of operation in successful cases may be considered under three headings:

Subjective Symptoms.—It has been a universal observation that subjective symptoms such as headache, dizziness, palpitation and a feeling of "inner tension" are dramatically relieved in a high percentage of cases, including many in whom there is little or no lowering of the blood pressure. This has been attributed to denervation of the adrenal glands. These results, while admittedly subjective, are frequently very gratifying to the patient, particularly when they permit him to return to a gainful occupation. Relief from severe and disabling headaches is particularly welcome.

Objective Findings.—Chief interest attaches to the effect of operation upon the blood pressure level, and this tends to become the sole criterion by which the result of operation is judged. For purposes of comparison both preoperative and postoperative pressures should be determined under similar circumstances, preferably after a period of bed rest, and pressures should be compared in both the recumbent, sitting and standing postures. It is manifestly unfair to compare a preoperative reading obtained after a period of rest with a postoperative reading obtained in the physician's office.

During the first weeks following operation many patients display a marked orthostatic hypotension. Assumption of the erect posture is followed by a precipitous fall of blood pressure together with palpitation, giddiness, and even syncope. It may be necessary for the patient to wear a snug abdominal binder and even to wrap the legs with elastic bandages in order to stand up. These effects tend to wear off in the course of a month or two, but some fall of blood pressure on assumption of erect posture may persist indefinitely. A number of patients will demonstrate a fall of blood pressure on exercise postoperatively rather than the normally encountered rise.

Three recent follow-up reports demonstrate the beneficial effect of operation on blood pressure levels. Peet, reporting on 437 cases followed for from five to twelve years after operation, found that 46.7 per cent showed a significant reduction in blood pressure at (least 40 mm. systolic and 15 mm. diastolic). Among patients still living, 81.3 per cent showed a significant reduction. It may be mentioned that Peet's patients included a relatively large number with advanced and malignant hypertension. The results were naturally superior in those with milder forms of the disease.

Poppen, reporting on 100 consecutive patients subjected to an extensive sympathectomy and followed for one and a half to four years, found that 47 per cent had good results, i.e., a reduction of blood pressure to nondangerous levels, and relief of symptoms, the patient being in good physical condition. An additional 24 per cent of patients had a fair result, i.e., they were relieved of symptoms, were in good health, but had experienced a lesser fall in blood pressure although all pressures were in a range regarded as relatively nondangerous. A satisfactory result was obtained in 71 per cent of patients.

Palmer, reporting on a group of Smithwick's patients, found that whereas early in their postoperative course two-thirds of the patients had blood pressures which were normal or nearly normal, at the end of three years only 25 per cent maintained this level. However, a similar

group of patients treated medically with thiocyanates yielded only one-half as many favorable results.

These three reports are not comparable one with the other because the types of cases treated and the criteria for judging results vary among them, but they all demonstrate the effectiveness of surgical treatment and its superiority over medical management.

Objective improvement is not limited to blood pressure levels alone. Improvement in funduscopic findings, with disappearance of hemorrhages, exudates and edema has been frequently observed following operation, whereas such an occurrence is rare indeed under medical treatment. Localized angiospastic changes frequently are observed to disappear; sclerotic changes, of course, are permanent.

A significant percentage of patients noted to have enlarged hearts and electrocardiographic changes preoperatively show a return of such findings to or towards normal. However, patients presenting actual hypertension heart disease with congestive heart failure are not often benefited.

Careful rechecks of kidney function have demonstrated that most patients presenting normal or nearly normal findings preoperatively will maintain their level of kidney function for long periods postoperatively, and some show improvement. But those patients in whom actual nitrogen retention in the blood was present preoperatively are seldom benefited by surgery.

Longevity.—Perhaps the best demonstration of the efficacy of surgery in the treatment of hypertension is provided by studies of mortality rates in comparable groups of patients under medical and surgical management. The statistics of Keith and Wagener provide the best available standard against which to test the results of surgical treatment. Peet has presented such a comparison. His statistics show that whereas only 60 per cent of those with mild (Group I) hypertension survived for five years under medical management, 100 per cent of such patients subjected to operation lived a similar time. Among patients presenting evidence of more advanced hypertensive disease with organic changes in the blood vessels, heart and kidneys (Group II), the advantage in favor of the group operated upon was much less striking. Greatest interest attaches, however, to patients with malignant hypertension (Group IV), that is, those who present evidence of retinal edema together with a rapidly progressive hypertension. Under medical management 79 per cent of such patients die within a year and 99 per cent within five years. Longevity following operation is strikingly increased; 19 per cent of 112 patients with malignant hypertension operated upon by Peet were alive at the end of five years.

Palmer has also emphasized the good results to be obtained in cases of malignant hypertension subjected to operation before the onset of renal and cardiac failure.

Selection of Patients for Operation

The judicious selection of hypertensive patients for surgical treatment involves both scientific and humanitarian considerations. Adherence to too strict standards will permit the compilation of an enviable set of statistics, but will exclude many borderline patients who, facing inevitable disaster, will be denied their chance for help. Adoption of too liberal a policy, on the other hand, will yield so many poor results that the reputation of the surgical method will suffer and patients will be sujected to needless inconvenience and expense.

A review of the literature shows a considerable diversity of preoperative criteria for the selection of patients. Attempts to set up tests, usually relating to the behavior of the blood pressure under various conditions of stimulation and sedation, have not been too successful in predicting favorable responses to operation. On the other hand, certain indications of a probable poor result have been discovered and these appear to be much more consistent. Thus the process of case selection is largely one of exclusion.

It is, of course, assumed that in the patient under consideration other causes of arterial hypertension, such as unilateral kidney disease and pheochromocytoma, have been excluded.

Most authors find that patients in the younger age groups, presumably having less vascular sclerosis, are more favorable subjects. The optimum age for operation is below forty years, and rarely is there occasion for operating on patients over fifty. Females are notoriously more tolerant of hypertension than males, and as a group they yield better results following operation.

A family history of hypertension, with a record of parents and close relatives dying as young adults of strokes, Bright's disease, or conges-

tive heart failure, should certainly dispose one toward advising operation at as early an age as possible in patients showing unmistakable evidence of progressive hypertension. If operation on a purely prophylactic basis is ever justified, it is in this group.

The preoperative study of the patient's blood pressure should be carried out over a period of time and under varying conditions of activity and rest. Smithwick has particularly emphasized the difficulties of estimating the true state of the patient's blood pressure from single examinations, particularly those performed in the doctor's office, since these usually represent maximum readings. It should be demonstrated that the patient has a persistent elevation of blood pressure and that it is progressively becoming higher in spite of medical management.

The lability of the blood pressure may be checked by recording hourly readings over a twenty-four to forty-eight-hour period of bed rest, and by similar hourly recordings after heavy sedation (sodium amytal gr. 3, hourly for three hours). A labile blood pressure is no guarantee of a good result following operation, but a relatively fixed blood pressure practically excludes it. Smithwick has found that when the pulse pressure, determined at rest, is less than one-half the diastolic pressure, the prognosis for improvement is good, while if the pulse pressure approaches or exceeds the diastolic, the chances for success are poor.

Careful study of the patient's fundi is most important for it provides an estimate of the degree of arteriolar sclerosis present. Observable also may be evidences of active vasospasm and retinal edema. The latter indicates that the case is one of malignant hypertension.

Study of the heart size and function, electrocardiography, and careful tests of kidney function are essential to exclude unsuitable cases. As previously indicated, patients with congestive heart failure and nitrogen retention in the blood seldom obtain worth-while results. Evidence of more than minimal coronary artery disease in the electrocardiogram should exclude the patient since coronary closure accounts for most of the few operative fatalities.

A history of cerebrovascular accident, if not in itself disabling, is no contraindication to operation, provided the patient is otherwise suitable.

Contraindications for Surgery

1. Mild, nonprogressive hypertension.
2. Age over fifty years.
3. Fixed blood pressure level with a high pulse pressure.
4. Nitrogen retention in the blood.
5. Coronary artery disease.
6. Congestive heart failure.

Indications for Surgery

1. Progressive, labile essential hypertension in a patient under forty years of age, without evidence of important organic changes in the blood vessels, heart, or kidneys, especially in the presence of disabling subjective symptoms and/or a family history of early hypertensive deaths.
2. Early malignant hypertension, before the onset of renal and cardiac failure.

Conclusion

Surgery in the form of thoracolumbar sympathectomy is the best available treatment for some patients with essential hypertension. Properly applied, it is a safe and effective method which will alleviate symptoms and prolong life. It is not a last resort or a measure of desperation and should be offered to the patient while he is still in a condition to obtain its full benefits.

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There is no short cut to a new thing. It must be preceded by long, tedious hours of experimentation and scores of disappointments. The only time you cannot afford to fail is the last time you try.—Charles F. Kettering.

ABDOMINAL EMERGENCIES IN GENERAL PRACTICE

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IN this paper only a few of the acute abdominal emergencies will be discussed. The need of the physician to develop an awareness of the possibilities of the symptoms of continued abdominal pain is evident. The presence of abdominal pain associated with nausea and vomiting which has been present for six hours or longer must be considered as evidence of a serious lesion of the abdomen and one which in most instances requires surgical interference.[5] One cannot see such patient and promise to return later. The responsibility for the care and recovery of the patient is definitely in the hands of the physician who first sees him. The care of these patients will constitute about 10 per cent of all general major surgery in the average rural hospital.

A brief report of such patients seen in Bethesda and St. Vincent's hospitals in Crookston may be descriptive of those seen in similar hospitals throughout the state. Both hospitals are approved by the American College of Surgeons; both are fifty-bed hospitals, but each has been caring for up to eighty patients per day recently; both have excellent laboratories; and the same men are on the staffs of both hospitals. There is a trained and resident anesthetist in each hospital. The cases here reported were cared for by the members of the staffs of both hospitals.

During the two years 1945 and 1946, 8,151 patients were cared for, exclusive of newborn. There were 1,324 major operations, of which 135 were acute abdominal emergencies. Of these, 104 were acute appendicitis, of which sixteen were perforated. There were five cases of perforated peptic ulcer; seven cases of ruptured tubal pregnancy; two cases of intussusception; five cases of intestinal obstruction and twelve cases of other diagnosed conditions. There was no death among the appendicitis cases.

The physician who is called to see a patient with symptoms indicating an acute abdominal emergency is faced with a most tremendous responsibility, as the life of the patient is entirely in his hands. An attempt at early diagnosis must be made, and once the diagnosis has been made, early operation is mandatory. If a diagnosis is not immediately possible, the attending physician should not hesitate to ask for consultation and to take his patient to the nearest hospital where laboratory facilities are available. If it is evident that he is dealing with an acute abdominal condition, early operation should be done without spending valuable time in confirming or rejecting a tentative diagnosis. An exploratory laparotomy will carry little risk, while delay will result in a high mortality. These cases require quick thinking and sound judgment, as the mortality rate varies directly with the delay in operation.

In dealing with these emergencies, one's first concern should be the saving of the patient's life, doing a minimal amount of surgery and planning a secondary operation later if necessary. The physician should avail himself of every possible therapeutic agent. Most of these patients are first seen by a general practitioner who will have hospital facilities available at a short distance. Many of these patients will undergo operation at the hands of a general surgeon, especially in the rural areas.

The physician is usually called in these cases because of the patient's complaint of severe abdominal pain. At present, hospital facilities are within a short distance of the patient by automobile or ambulance, and he should be given the added advantage that early hospitalization gives him. An early attempt should be made to eliminate the question of medical conditions simulating surgical disease. Here again, pain may be the principal or only complaint, and this will bring to mind the acute abdominal symptoms arising from such conditions as pleurisy, pneumonia, coronary disease, spinal nerve pain, diabetic conditions and others. After it has been decided that the pain is really due to some acute abdominal condition, the attempt to make a differential diagnosis should be made. One will remember that most acute abdominal conditions will arise from (1) inflammation, (2) obstruction, (3) perforation, or (4) hemorrhage.

Improvement in mortality rates in the surgical care of these patients has been outstanding in the last ten or fifteen years. This is due not so much

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to improved surgical technique as to better preoperative and postoperative care; improvement in general anesthesia (gas with curare and sodium pentothal); better spinal anesthesias; the more frequent use of transfusions, whole blood or plasma, preoperative and postoperative; the use of sulfa drugs and penicillin; and early ambulation. Wangensteen suction with either a Levine or a Miller-Abbott tube has saved lives; amino acid therapy promises to save additional ones. Surgical technique as applied to acute abdominal emergencies has not changed much in the last ten years.

In the past the surgeon devoted much attention to perfecting surgical technique, assuming that if an operation was well done the patient should be assured of recovery. It is now well established that while careful technique is essential it is only one of the factors which will enter into the problem of making the patient's chances of recovery better. Other factors include the correction of deficiencies due to diet or disease or vomiting. This may be done by intravenous therapy in most instances, as the case is an emergency, and will consist of the administration of water, blood and plasma, glucose, and other substances including electrolytes and vitamins.[2]

Trauma will be diagnosed early because of history of accident or because of wounds of the abdomen. Such abdominal wounds may be penetrating or nonpenetrating; the latter cases cause some diagnostic difficulty. Treatment usually consists of suturing the small intestine with no drainage in early cases and doing an exteriorization of the large bowel. It is the continual leakage of fecal contents that makes such wounds dangerous, while small punctures will often heal spontaneously. Patients seen late are often better treated expectantly with the hope that perforations and other trauma may be finally well walled off. Lacerations of solid organs will be looked for.[6]

Appendicitis remains the greatest single cause of abdominal emergencies, and appendectomies will constitute 50 to 70 per cent of all operations for acute abdominal conditions. Appendicitis is typical of the inflammatory type of acute abdominal conditions. In the last thirty years this disease caused the deaths of 500,000 persons—a sizable army.[4] The New York Life Insurance Company reported that of one thousand deaths of policyholders in 1937 fifteen were due to appendicitis. Abell reported 20,000 deaths in 1940. Any disease which causes so many deaths is deserving of study. The development of the present era of surgery can nowhere be better demonstrated than in the treatment of acute appendicitis. It is believed that recent trends will mean a rapid lowering of mortality rate.

In the last twenty years four major contributions to surgery have been applied to the treatment of acute appendicitis. These are (1) intragastric suction, (2) intravenous fluids, (3) whole blood and plasma transfusions, and (4) chemotherapy and antibiotic therapy. Early ambulation might be added. This has reduced the mortality rate in the presence of perforation by 50 per cent. There has been a much less spectacular reduction of mortality in cases without perforation.[7]

The question of whether or not to drain has been discussed very much in the past. It appears that drainage of the peritoneal cavity for appendiceal peritonitis carries a very high mortality as compared to the case which is not drained. The same is true of appendiceal abscess where the better treatment is removal of the appendix where possible, closure of the peritoneum, and drainage to the peritoneum. Postoperative complications will be much less.

Perforated peptic ulcers are relatively common. Pain is the initial symptom and is so intense that it completely incapacitates the patient at once. The history of sudden onset, perhaps a past history of "indigestion," and the boardlike abdomen with evident great pain should cause the examiner to be on the alert for this condition. The patient who is seen two to four hours later may have confusing symptoms in that he may feel better and the rigidity may be less. It is at this stage of the disease that mistakes in diagnosis are common.

Graham's trinity of signs and symptoms indicative of intraperitoneal irritation apply to perforated peptic ulcer cases: (1) pain and tenderness; (2) one point of maximum tenderness; (3) it hurts the patient to roll over in bed. When the added symptom of rebound tenderness is present, the condition demands a laparotomy.[3,11] Surprisingly, cultures are frequently negative and peritoneal infection is not always present in fatal cases, but not many surgeons at present will follow Taylor[8] and others in treating these cases medically with suction, et cetera. Operation is indicated as early as possible. Here again, time

should be taken for careful preparation of the patient, and suction preoperatively and postoperatively may be life saving.

Black and Blackford[1] advise early but conservative operation for perforated peptic ulcer. Drainage is not necessary if operation is done in the first six to eight hours. After twenty-four hours or more they state that conservative nonsurgical treatment with continuous nasal suction may be the best possible. Vaughn[9] feels that if the patient is seen twenty-four or more hours after perforation, operative interference may lessen chances for recovery by breaking down adhesions which have closed the perforation, and that continuous nasal suction may be the best treatment. Wangensteen[10] in 1935 used suction in perforated ulcer cases when operation was not done.

Obstruction of the bowel is characterized by a colicky type of pain with comparative rest periods between cramps. The abdomen is noisy in the early case and this is characteristic. Perhaps the outstanding symptom here is the persistent vomiting in small bowel obstruction, differing from that of appendicitis where the patient vomits only a few times if at all. Surgery in these cases is imperative and prognosis will be better with careful preoperative treatment of shock and loss of fluids. A "must" in these cases is Wangensteen suction by a Levine or Miller-Abbott tube.

Hemorrhage as a cause of acute abdominal emergencies is well represented by the case of ruptured ectopic pregnancy. Other causes of abdominal hemorrhage are perforating wounds, and a rare cause is that of bleeding from cyst of the ovary. Shock in these cases may indicate excessive hemorrhage, and if shock does not improve with preoperative therapy the patient will have to be operated upon during shock, whole blood being given during the operation. Following abdominal trauma there may be profuse hemorrhage from an injured liver, spleen or mesentery. Bleeding from a spleen requires its removal while laceration of the liver may be best treated by suture or tamponade. Some patients with bleeding will have to be operated upon in shock and the mortality will of necessity be high.

The unusual case will cause the attending physician more worry, in that symptoms sometimes do not follow the usual pattern or closely parallel the symptoms of some of the more usual conditions. This will mean mistaken diagnoses fairly often, but with the history and symptoms of an acute emergency, exploration will be life saving.

The patient with acute abdominal symptoms should call a physician early. Early hospitalization and early operation should be the rule.

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BOWEL OBSTRUCTION

An Analysis of 148 Cases

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IT would be fitting and proper in presenting a study on this subject to review briefly the salient factors which recently have come to our attention. The management of bowel obstruction successfully depends on the rational combination of non-operative and operative treatment.

All of us are aware of the desperate plight in which the individual who has a bowel obstruction finds himself. Our responsibility to him is urgent. It is important that we be able to decide on prompt, specific treatment and to recognize the moment when surgical intervention is indicated. The importance of the combination of non-operative and operative treatment cannot be emphasized too much.

Veal has summarized the mass of available data on acute bowel obstruction very nicely by saying, "The local lesion consists of distention of the bowel, alteration in its secretory and absorptive function, impairment of local circulation, and eventually gangrene of the involved segment of the intestine. The metabolic disturbance consists chiefly of loss of water, electrolytes, plasma, retention of nonprotein nitrogen and urea."

In the chronic type of low bowel obstruction, malignant neoplasms have been present so frequently that we automatically associate them. The metabolic changes are, of course, much slower in appearing, and the toxicity of the patient is much less in this type. More deliberate planning therefore may be used in choosing the method of relief to the individual.

We must expedite the treatment as soon as the diagnosis is made. Wagensteen and Paine, who made practical the decompression of the stomach and upper digestive tract by nasal suction, also have shown that it is one of our best procedures in the treatment of bowel obstruction. Finney emphasizes that this decompression be maintained both during and following operation.

Dehydration completely upsets the normal metabolism of the body so that death ensues if steps are not taken to combat it. A rapid loss of fluids from the body causing dehydration results when vomiting occurs, when there is loss of fluid into the peritoneal cavity, and when there is a disturbance in the secretory and absorptive mechanism of the bowel. This dehydration causes a fall in blood chlorides, a rise in nonprotein nitrogen, and an increase in the carbon dioxide content of the blood.

Much work has been done by Coller, Maddock, and their associates at Ann Arbor on the "electrolyte balance" of the body. They have shown that in the patient who cannot drink enough, fluid in the form of 5 or 10 per cent glucose in distilled water can be given parenterally. The body handles this fluid as though it were taken by mouth. The water becomes available for all purposes, and the glucose is either oxidized or stored as glycogen. The blood chlorides can easily be replaced by the parenteral administration of saline. Caution must be used as over-concentration of chlorides may be dangerous. DeWesselow has pointed out that a proper balance cannot always be determined by laboratory blood chloride determinations but that the clinical picture of the patient is important. The judicial replacement of fluids, electrolytes, and proteins therefore may be life saving in the management of bowel obstruction.

An adequate urinary output is essential. Wangensteen, White, Sweet, and Hurwitt all advocate a minimum output of at least 1,000 c.c. daily, although the seriously ill patient may require an output of 1,500 c.c. of urine in twenty-four hours. Coller recommends that no isotonic saline solution or Ringer's solution be given during the day of operation or during the subsequent two postoperative days. Isotonic or Ringer's solution may then be used after the postoperative urinary suppression has disappeared.

The kidneys are important regulators of the salt balance of the body and have been known to excrete as high as a 2 per cent concentration of salt in the urine; however, in low salt concentration of the body, only traces of salt may be found. The normal amount of salt in the body is 560 to 630 mg. per 100 c.c. of blood as determined by the blood plasma chloride concentration. The

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ability of the average surgical patient to handle salt is about the same as a well individual. The case is entirely different in the sick surgical patient; here the ease with which the kidney retains salt in the body increases.

The seriously ill patient loses salt by vomiting, nasal suction, prolonged sweating, diarrhea; and there is no replacement when there is no intake of food or water. It should be re-emphasized, however, that caution must be used not to overdo the replacement of salt in the seriously ill patient.

Recently the loss of plasma proteins has been a subject of much investigation. This loss is more important and apparent in the person with a chronic bowel obstruction. Previously, whole blood and plasma were our only available supply of protein. Now, several available commercial preparations like "amigen" contain all the necessary amino acids.

The management of the acutely ill patient with bowel obstruction presents different problems. The stomach and upper gastrointestinal tract must be decompressed with nasal suction. The replacement of fluids, salt, and protein is essential; and the determination of the amount necessary will depend on the time elapsed since the onset of symptoms, the level of the obstruction (whether high or low) and the amount of vomiting. Finney emphatically states that if colicky pains continue after decompression of the stomach and there has been time for even partial restoration of the fluid and electrolyte balance, immediate surgical exploration is mandatory. He also states that the average patient should be given in a twenty-four hour period a minimum of 3,000 c.c. of water, 5 gm. of electrolyte, 150 glucose, and 50 gm. protein. This should keep the patient in the proper balance.

The cases presented in this study of bowel obstruction are from Fairview Hospital during the years 1931 to 1947, and 148 consecutive cases are included in this sixteen-year period.

It has been difficult in some cases to evaluate the information available as to the actual existence of a bowel obstruction. It was decided that if the bowel obstruction was severe enough to warrant specific relief, it could be included in this series. No effort has been made actually to differentiate between a partial and complete obstruction. As a rule, however, most of the high obstructions were complete; and the low obstructions varied from partial to complete. Most of the obstructions due to malignancy were diagnosed beforehand and came to the attention of the physician because of bowel disturbances, bleeding, or change of bowel function. However, there were some patients who did not seek relief until the obstruction became complete.

TABLE I. TYPES OF OBSTRUCTION

Mechanical (Adhesions)	30
Inguinal Hernia	16
Volvulus	5
Postoperative Ventral Hernia	4
Intussusception	4
Foreign Body	3
Femoral Hernia	2
Umbilical Hernia	2
Benign Tumor (Recto-Sigmoid)	1
Mesenteric Thrombosis	1
Meckel's Diverticulum	1
Diverticulitis	1
Carcinoma of Sigmoid	29
Carcinoma of Transverse Colon	12
Carcinoma of Recto-Sigmoid	11
Carcinoma of Cecum	10
Carcinoma of Descending Colon	5
Carcinoma of Ascending Colon	4
Carcinoma of Splenic Flexure	1
Carcinoma of Hepatic Flexure	1
Carcinoma of Duodenum	1
Carcinoma of Jejunum	1
Carcinoma of Ileum	1

In reviewing these cases, it is convincing that our high mortality in bowel obstruction is due in part to the tardiness of the patient in seeking relief. Many of these individuals were very acutely ill on admission, some of them even approaching the moribund stage. Operative notes revealed resection of large pieces of gangrenous gut with an already established peritonitis.

The mechanical obstructions (Table I) constitute the largest group in this series, most of them caused by adhesions such as omental bands, inflammatory reactions and postoperative adhesions. There were thirty in this group.

It is surprising to find only sixteen obstructions due to inguinal hernia. We have heard it spoken of so frequently that we would expect more. Four were due to postoperative ventral hernia. Ventral and umbilical hernias each caused two obstructions, making twenty-four the total number of obstructions due to hernia. There were five obstructions due to volvulus. Intussusception caused four obstructions, three of which were reduced by operation and one by barium enema. There were three due to foreign bodies—a penny, a fecal impaction, and a large gallstone. Benign tumor of the rectosigmoid, mesenteric thrombosis, Meckel's diverticulum, and diverticulitis each caused one obstruction.

Of this series of 148 bowel obstructions, seventy-six were caused by malignancy. Most of these

TABLE II. OPERATIVE PROCEDURES

	No.	*Deaths*
Reduction of Hernia	18	1
Reduction of Hernia with Resection	2	2
Liberation of Adhesions	18	3
Liberation of Adhesions with Resection	2	2
Reduction of Intussusception	2	0
Reduction of Intussusception with Resection	1	0
Reduction of Intussusception Nonsurgically	1	0
Reduction of Volvulus	4	1
Reduction of Volvulus with Resection	2	1
Ileo-colostomy	17	5
Ileostomy	8	6
Nonresectable	5	3
Colostomy	26	4
Exteriorization	9	5
Removal of Foreign Body	2	2
Primary Anastomosis	9	3
Anterior-Posterior Resection	4	0

TABLE III. MORTALITY

	Number of Cases	Deaths	Percentage
Total cases studied	148	41	27
Total cases operated	130	35	26
Cases not operated	18	6	33
Male	60	19	31
Female	88	22	25
High obstruction	55	18	33
Low obstruction	93	23	24
Acute obstruction	77	26	33
Chronic obstruction	71	15	21
Exploratory	6	3	50

were partial but varied in degree from partial to complete obstruction. Carcinoma of the sigmoid was by far the most common malignant lesion, occurring in twenty-nine cases. We found twelve carcinomas of the transverse colon. Carcinoma of the rectosigmoid occurred in eleven cases. Carcinoma of the cecum was next, with ten cases. There were five carcinomas of the descending colon and four in the ascending colon. There was one obstruction due to carcinoma of each of the following: splenic flexure, hepatic flexure, duodenum, jejunum, and ileum. These diagnoses of cancer were made by microscopic examination of the specimen, autopsy, observation at operation and x-ray examination. It is interesting to note that there were only three cases of cancer of the small bowel, and these were in different portions of the small bowel.

The operative procedures (Table II) used in the treatment of the bowel obstruction varied with the type, acuteness, locality, and duration of the obstruction. Simple reduction was resorted to eighteen times, with one death. In the two patients in whom resection following reduction was necessary, both died, a mortality of 100 per cent. In the eighteen patients in whom adhesions were liberated there were three deaths. There were only four cases of intussusception. One of these was reduced by a barium enema and the others by operation. Of six patients with volvulus, the two who required resection died.

In the treatment of obstruction of the large bowel, it is of special interest to note the application of the recent trends in large bowel surgery. Primary anastomosis in selected cases with adequate preoperative preparation has been highly successful.

The most common procedure was colostomy. There were twenty-six colostomies performed with four deaths. Seventeen ileocolostomies were performed, both two-stage and one-stage; there were five deaths. There were nine primary anastomoses with three deaths, and there were nine exteriorizations with five deaths. There were four anterior-posterior resections done. These obstructions were in the rectosigmoid junction. There were no deaths. There were two foreign bodies removed with two deaths, a 100 per cent mortality.

Of the total number of 148 cases studied, there were forty-one deaths (Table III) or a mortality of 27 per cent. Among the 130 patients operated upon, there were thirty-five deaths, a mortality of 26 per cent.

Eighteen individuals were not operated upon. There were six deaths in this group with a mortality of 33 per cent. These were cases that were thought inoperable, others refused surgery, and some were sent elsewhere for operation. There were sixty males, with nineteen deaths—a mortality of 31 per cent, compared with eighty-eight females, with twenty-two deaths—a mortality of 25 per cent. There were fifty-five high obstructions with eighteen deaths, a mortality of 33 per cent. It was found that the mortality rate was the highest in this group in other hospitals also. There were ninety-three low obstructions with twenty-three deaths, a mortality of 24 per cent. There were seventy-seven acute obstructions with twenty-six deaths, a mortality of 33 per cent. There were seventy-one cases of chronic obstruction with fifteen deaths, a mortality of 21 per cent. There were six cases in which only an exploratory operation could be done, and there were three deaths, a mortality of 50 per cent.

A table of mortality in all obstructions in relation to age has been compiled (Table IV). We find that in the total number of 148 cases, the most deaths occurred in the fifty to sixty year age group. There were thirty-seven cases with six

deaths, a mortality of 16 per cent. The highest mortality was in the eighty to ninety year age group where six of the seven patients died, a mortality of 84 per cent. In the seventy to eighty year age group there were twenty-one cases with six deaths, a mortality of 28 per cent. In the sixty to seventy year age group there were thirty-three cases with ten deaths, a mortality of 30 per cent. In the forty to fifty year age group there were twenty-five cases with seven deaths, a mortality of 28 per cent. There were only nine cases in the thirty to forty year age group with three deaths, a mortality of 33 per cent. Six cases occurred in the twenty to thirty year age group with two deaths, a mortality of 33 per cent. There were two cases in the ten to twenty year age group with one death, a mortality of 50 per cent. In the age group under ten years of age there were seven cases with no deaths.

TABLE IV. MORTALITY IN ALL BOWEL OBSTRUCTION
AGE COMPARISON

Age Group	80	70	60	50	40	30	20	10	1
Cases	7	21	33	37	25	9	6	2	7
Deaths	6	6	10	6	7	3	2	1	0
Per cent	85	28	30	16	28	33	33	50	0

TABLE V. MORTALITY IN BOWEL OBSTRUCTION
DUE TO MALIGNANCY
AGE COMPARISON

Age Group	80	70	60	50	40	30	Total
Cases	3	12	22	20	16	3	76
Deaths	2	4	6	3	4	1	20
Per cent	66	33	27	15	25	33	28

Table V is compiled to show the age group mortality in bowel obstruction due to malignancy. The sixty to seventy year age group had the most cases, there being twenty-two with six deaths, a mortality of 27 per cent. The fifty to sixty year age group was next, having twenty cases with three deaths, a mortality of 15 per cent. The forty to fifty year age group had sixteen cases with four deaths, a mortality of 25 per cent. The seventy to eighty year age group had twelve cases with four deaths, a mortality of 33 per cent. The eighty to ninety year age group had three cases with two deaths, a mortality of 66 per cent. The thirty to forty year age group had three cases with one death, a mortality of 33 per cent.

Table VI shows the mortality of bowel obstruction due to malignancy. In the seventy-six total cases due to malignancy, there were twenty deaths, a mortality of 28 per cent. There were seventy-two obstructions in the large bowel with nineteen deaths, a mortality of 27 per cent. There were three cases of obstruction due to malignancy of the small bowel with one death, a mortality of 33 per cent.

TABLE VI. MORTALITY IN BOWEL OBSTRUCTION
DUE TO MALIGNANCY

	Cases	Deaths	Percentage
Malignancy	76	20	28
Large bowel	72	19	27
Small bowel	3	1	33

An attempt was made to tabulate the progress of bowel obstruction management over four four-year periods from 1931 through 1946 (Table VII). It was interesting to note that there was a definite increase in the number of cases for each four-year period.

In the first period (1931 to 1934), there were only twelve cases with five deaths, a mortality of 41 per cent. Of these, there were six cases of high acute obstruction with two deaths, a mortality of 33 per cent. There were two cases of low acute obstruction with no deaths. There were four cases of low chronic obstruction with three deaths, a mortality of 75 per cent.

In the next group (1935 to 1938), there were sixteen cases with five deaths, a mortality of 31 per cent. This is a decrease of 10 per cent in

TABLE VII. COMPARATIVE MORTALITY

Four Year Periods	1931-1934			1935-1938			1939-1942			1943-1946		
	Case	Death	%	Case	Death	%	Case	Death	%	Case	Death	%
High acute	6	2	33	3	3	100	17	5	30	31	9	29
High chronic							1	0	0	10	2	20
Total	6	2	33	3	3	100	18	5	27	41	11	26
Low acute	2	0	0	1	0	0	6	2	33	11	3	27
Low chronic	4	3	75	12	2	16	20	4	20	24	6	25
Total	6	3	50	13	2	15	26	6	23	35	9	25
Total All Obstructions	12	5	41	16	5	31	44	11	25	76	20	26

mortality from the previous period with an increase of four cases. Here there were three cases of high acute obstruction with three deaths, a mortality of 100 per cent. There was one low acute obstruction with no death and twelve low chronic obstructions with two deaths, a mortality of 16 per cent.

In the third period (1939 to 1942) there were forty-four cases, an increase of twenty-eight cases over the previous four years. There were eleven deaths, a mortality of 25 per cent, a decrease of 6 per cent. During this period the use of stomach and upper gastrointestinal decompression began; also the use of sulfonamides. There were seventeen high acute obstructions with five deaths, a mortality of 30 per cent; one high chronic obstruction with no death. There were six low acute obstructions with two deaths, a mortality of 33 per cent. There were twenty low chronic obstructions with four deaths, a mortality of 20 per cent.

In the last group, comprising the years 1943 to 1946, there was a total number of seventy-six cases with twenty deaths, a mortality of 26 per cent. This is approximately the same mortality as in the previous group. During this period, in addition to nasal suction and sulfonamides, we began the use of penicillin and streptomycin. There were thirty-one high acute obstructions with nine deaths, a mortality of 29 per cent. There were ten high chronic obstructions with two deaths, a mortality of 20 per cent. There were eleven low acute obstructions with three deaths, a mortality of 27 per cent. There were twenty-four low chronic obstructions with six deaths, a mortality of 25 per cent.

The very definite increase in the number of cases from group to group would indicate that we are recognizing these obstructions, especially those of a malignant nature. We are also recognizing the advance that modern surgery has made in successfully operating on patients we previously felt were inoperable.

The definite decrease in mortality in the last two periods is indicative of better treatment. The advancements of nasal suction, sulfonamides, streptomycin, whole blood transfusion, and supportive treatment have made surgical procedures possible at the present time which were not attempted previously.

In reviewing the literature, we find frequent references to high mortality occurring in bowel obstruction following operations for acute appendicitis. This was true in our series of cases also. We had eight cases of bowel obstruction following operation for acute appendicitis in which reoperation was required. There were five deaths, a mortality of 62 per cent.

It has been suggested that better results can be obtained if we treat these patients conservatively for a longer period of time, as some of them will not need to be operated upon if their symptoms subside under decompression of the upper gastrointestinal tract, parenteral therapy, and whole blood transfusion. We must bear in mind, however, that in these cases, should the symptoms persist in spite of adequate nonoperative treatment, surgical intervention is necessary.

Summary

1. A total number of 148 consecutive cases of bowel obstruction at Fairview Hospital have been studied.

2. Of the 148 cases studied, there were forty-one deaths, a mortality of 27 per cent. Of the 130 patients operated upon, there were thirty-five deaths, a mortality of 26 per cent.

3. There was a definite decrease of mortality in each four-year period from 1931 through 1946.

4. The high mortality of bowel obstruction can be reduced by (a) the earlier presentation of the patient for treatment, (b) adequate non-operative treatment such as replacement of fluids, glucose, electrolytes, and proteins.

5. If colicky pains still persist in the abdomen after decompression of the stomach and upper gastrointestinal tract, immediate surgical exploration is mandatory.

6. Decompression of the stomach and upper intestinal tract should be established by nasal suction as soon as the diagnosis of bowel obstruction is made. This procedure should be carried on postoperatively until all distention disappears.

7. In addition to blood chemistry determination an accurate fluid intake and urinary output record is extremely valuable.

8. Defunctionalization and decompression of the colon in complete or partial obstruction of the left colon may be best accomplished by a transverse colostomy.

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Discussion

IVAR SIVERTSEN, M.D.: I have enjoyed this paper very much. I do not know that I shall say a great deal about the subject. During Dr. Skjold's paper, I noted that not much was said about the use of nasal suction or the Miller-Abbott tube.

The mortality of this group of cases for Fairview Hospital has been more than average. It may be due to the fact that the patient has not been prepared before surgery, especially with the use of nasal suction or the use of the Miller-Abbott tube.

I have used the Miller-Abbott tube for some years, and in 1940 I suggested to Dr. Wangensteen that he try the use of mercury in the Miller-Abbott tube until it has passed into the duodenum. I had found it rather difficult to get it into the intestines on several occasions, but since I have used mercury in the bag of the tube, we have had less trouble. I have seen the tube pass through the gastrointestinal tract and appear in the anus when mercury was used. I also found that we can decompress the stomach with the ordinary nasal suction procedure and use the Miller-Abbott tube as well. Fluids intravenously, or subcutaneously, and transfusions of blood are certainly valuable in these cases. Preparation of the patient is most important. I think it was Dr. MacNealy who suggested the preparation of the patient very carefully with enemas, nasal suction, and even suggested small doses of mineral oil every day by mouth to soften the fecal matter in the bowel.

We must use all procedures that we can, and not only decompress the stomach but also the bowel. The patient will have to be watched carefully, and if pains continue after an effort has been made for decompression I think we had better depend on surgery to relieve the obstruction. I was just a little disappointed at the high percentage of deaths in our hospital, but hope they will decrease in the future.

O. J. CAMPBELL, M.D.: This is such an involved subject that it does not lend itself well to a brief discussion. I merely wish to compliment Dr. Skjold for undertaking this study and to suggest that it is a desirable type of study for each hospital staff to consider.

While the mortality rate which Dr. Skjold reports is high, I do not believe that it is excessively high for the period covered by the study and for the type of staff which did the operating, including as it does both trained surgeons and casual operators. Continued concern on the part of any hospital staff towards its operative results can hardly fail to influence favorably both the morbidity and mortality figures.

E. A. REGNIER, M.D.: I enjoyed hearing Dr. Skjold's paper. It takes a great deal of fortitude to critically review a large series of cases of intestinal obstruction. There seems to be a general impression that acute intestinal obstruction cannot be treated without the use of continuous aspiration of the stomach preoperatively. It is my opinion that in purely adhesive, nonmechanical obstruction occurring in the recently operated cases, one is justified in using nasal suction. However, in all cases of obvious mechanical obstruction and suspected strangulating obstruction, I do not believe nasal suction offers anything but delay in operating. A great many times this method of treatment is used in patients who have gone beyond the stage of peristaltic pain and have developed an ileus. This is apt to be most misleading. There is only one treatment for acute obstruction and that is immediate surgery. Operating on these cases should never be delayed beyond the few hours which may be necessary to rehabilitate the patient sufficiently with fluids or blood in order to render operation safe. The use of nasal suction needs a great deal of clarification before the profession, and I believe its misapplication is fraught with danger.

CLARENCE DENNIS, M.D.: I would like to say a little in support of what Dr. Regnier has said. I believe all of us agree that in the treatment of small intestinal obstructions, there is need to use nasal suction either with Dr. Wangensteen's tube or with the Miller-Abbott tube or some modification of it, but to treat small intestinal obstruction with suction and forget about the patient is a grave mistake. If conservative therapy is to be employed, one must be certain that strangulation is not occurring. The abdomen must be examined every four to five hours, white blood counts must be made every twelve hours, temperatures and pulses must be taken every four hours around the clock, and a number of other things must be done to detect the presence of strangulation early. If one is not in a position to watch the patient very closely throughout, it is better not to use conservative therapy for small bowel obstruction at all.

I am in agreement with Dr. Regnier that cessation of cramps cannot be taken as an indication that conservative therapy has been successful in the management of small bowel obstruction.

ARTHUR C. SKJOLD, M.D. (closing): The mortality of bowel obstruction we know is high, and I am aware of the desperate plight in which these patients find themselves, having observed them in the different hospitals where I have worked. Many of them come in with an early existing peritonitis, and it seems to me that the procedure in these cases depends on one's own personal

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EVALUATION OF LIVER FUNCTION TESTS

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DR. A. H. WELLS: After sixteen years of critical experience with the interpretation of the clinical significance of laboratory measurements of the various physiologic functions of the liver, we found a few tests of definite value in demonstrating (1) decreased liver cell function due to diffuse diseases of the liver, (2) mechanical obstruction of bile ducts, and (3) the progress of certain liver diseases. Other laboratory tests prove to be of no differential diagnostic value. Dr. Joffe has laboriously reviewed some of our more recent experiences with a selected group of patients.

DR. H. H. JOFFE: Liver function tests are valuable supplements but not substitutes for a carefully taken history and a thorough physical examination.[19] The present dissatisfaction with liver function tests is largely due to a tendency to rely solely upon the result of one particular test.[34] Early recognition of liver disease by means of physical findings alone is often difficult.[10] The most careful clinical history laboratory studies and the best of medical judgment often do not enable one to distinguish medical or hepatocellular from surgical or obstructive jaundice. In our experience there are several laboratory tests which, when used together, greatly increase the physician's diagnostic ability in this frequent and serious field of medical practice.

I will now present for consideration our viewpoint of the literature and our experience with the icterus index, total serum bilirubin, qualitative Van den Bergh, quantitative direct and indirect Van den Bergh, cephalin flocculation, urine and stool urobilinogen, blood cholesterol and cholesterol esters, galactose tolerance, hippuric acid test, bromsulphalein excretion test, blood proteins and liver biopsy.

Icterus Index

The normal icterus index ranges from 2 to 6 units. It is a nonspecific color comparison test which is used clinically because of its simplicity.[4] The test is a rough but practical index of the degree of bilirubinemia. Hemolysis and turbidity of the serum interfere with the color comparison. Other substances such as carotene, lipochromes, and xanthophyll may impart a yellow color to the serum, thereby increasing the difficulties in interpretation.[4,14,43] In comparison, the quantitative Van den Bergh is an accurate scientific chemical measurement of bilirubin in the blood.

There is a wide range of the blood bilirubin (when measured by any method) in the hepatocellular causes of jaundice.[39] In the obstructive types of jaundice the icterus index is usually higher in the neoplastic jaundice, the average being about 100 units. In jaundice due to calculi it is rarely above this level. However, due to a considerable overlapping, the use of this test as a reliable means of differentiation is questionable.[39]

TABLE I. ICTERUS INDEX

Units	Hepatitis	Cirrhosis	Neoplastic	Cholelithiasis	Common Duct Stone
Under 20	0	4	1	0	0
20–60	37	11	2	20	2
61–100	17	0	3	5	4
101–140	3	1	3	1	0
Over 140	0	2	8	0	3
Total	57	18	17	26	9

In our series (Table I), eleven out of seventeen cases (64.7 per cent) of neoplastic (common duct obstruction due to cancer) jaundice showed an icterus index above 100 units. In the cases of hepatitis, thirty-seven of fifty-seven (64.9 per cent) showed an icterus index of under 60 units. In the group of cirrhosis, in fifteen of eighteen (83.3 per cent) the icterus index was under 60 units. In twenty-five of twenty-six cases (96 per cent) of cholelithiasis with or without cholecystitis, the index was below 100 units, and of the common duct calculi, six out of nine or (66 per cent) showed an icterus index under 100 units.

In conclusion, the tendency for neoplastic obstruction of the common duct to produce higher degrees of bilirubinemia is similar to the findings of others. It is, however, obvious that the test cannot be used with much success for differential diagnostic purposes, but must be limited to a measurement of degree of bilirubinemia.

Quantitative Van den Bergh

The total serum bilirubin is normally below 1.0 mg. per 100 c.c.[10,26,37] The total is roughly one tenth of the icterus index.[4,14] It is below 0.5 mg. per 100 c.c. in about 75 per cent of cases.[4] Jaundice is difficult to recognize if the level is below 2 mg. per cent.[10] In a group of cases the average value of the total bilirubin was found to be 10 to 15 mg. per cent in the obstructive jaundice due to stone, with a somewhat higher average, 20 to 30 mg. per cent, in neoplastic obstruction of the common duct. Some of the highest values of 30 to 50 mg. per cent were found in the cases of acute hepatocellular and neoplastic jaundice cases.[35]

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

TABLE II. TOTAL SERUM BILIRUBIN

Condition	No. of Cases	Mg. Per Cent			
		1–5	6–10	11–15	16–20
Hepatitis	42	24	15	3	0
Cirrhosis	12	7	3	2	0
Neoplastic	13	5	4	3	1
Cholelithiasis	19	13	6	0	0
Common Duct Stone	7	2	2	1	0

twelve (70 per cent) were direct and five (30 per cent) were biphasic. Of eleven cases of hepatitis, nine (81.8 per cent) showed a positive reaction, of which seven (77 per cent) were direct and two (23 per cent) were biphasic. In six cases of neoplasm, four (66.7 per cent) gave a positive reaction, of which two (50 per cent) gave a direct and two gave a biphasic reaction.

A study of Table III will lead to the already proved conclusion that the qualitative Van den Bergh tests are

TABLE III. QUALITATIVE VAN DEN BERGH

Condition	No. of Cases	Direct	Per-centage	Indirect	Per-centage	Biphasic	Per-centage
Hepatitis	46	28	60.8	4	8.7	14	30.5
Cirrhosis	14	9	64.4	2	14.3	3	21.3
Neoplastic	13	8	61.5	3	23.0	2	15.4
Cholelithiasis	24	10	41.6	4	16.6	10	41.6
Common Duct Stone	9	5	55.5	2	22.2	2	22.2

TABLE IV. QUANTITATIVE INDIRECT AND DIRECT BILIRUBIN

Condition	No. of Cases	Total Mg. Per Cent	Range of Indirect	Average Per Cent of Total	Range of Direct	Average Per Cent of Total
Hepatitis	22	1.24–11.4	0.092–0.095	14.9*	0.245–10.964	85.1
Cirrhosis	10	1.20–14.4	0.506–3.54	46.2	0.33–12.0	53.8
Neoplastic	9	4.87–13.12	0.668–1.75	15.1	4.20–11.9	84.9
Cholelithiasis	14	3.1 – 8.62	0–3.92	22	1.55–7.74	78
Common Duct Stone	7	7.42–12.93	1.57–1.64	21.4	5.77–12.93	78.6

* In one case the indirect was 80.2 per cent of the total.

A study of Table II can lead to but one conclusion, that an accurate measurement of the serum bilirubin does not aid in differentiating various causes of jaundice. The quantitative Van den Bergh test is the choice for following small daily variations of bilirubinemia in jaundice patients.

Qualitative Van den Bergh

In the history of liver function tests there has been nothing so detrimental to the general usage of the tests as the original enthusiastic and wide acceptance of the direct and indirect Van den Bergh tests as reliable means of differentiating the "medical" from the "surgical" types of jaundice. The scientific aura which accompanied the numerous lectures, textbook discussions and bedside talks concerning the explanations of the direct, indirect, biphasic, delayed direct, et cetera reactions simply accentuated the disillusionment which followed.

The great majority of cases of obstructive jaundice were found in time to be a combination of the so-called regurgitation (direct reacting) and retention (indirect reacting) varieties[4] and pure forms of retention (indirect reacting) jaundice were rare.[30] The qualitative Van den Bergh has not proved of value in the clinical differentiation between jaundice due to diffuse parenchymal liver damage and that due to mechanical obstruction of the bile ducts.[38] The qualitative Van den Bergh may be of some value in the restricted field of differentiating hemolytic from other causes of jaundice.

In a study [34] of forty-one cases of cirrhosis, seventeen or (41.5 per cent) showed a positive reaction, of which

of very little value in differentiating the diseases with hyperbilirubinemia.

Quantitative Direct and Indirect Van den Bergh

When the first reports of the use of the quantitative measurements of direct and indirect Van den Bergh reactions first appeared in the literature, our hopes were kindled anew with the belief that we now had a practical tool for the differentiation of "medical" from "surgical" jaundice. Although one can still find references in the literature as to the value of these tests in distinguishing diffuse diseases of the liver from mechanical obstruction of the bile ducts it is obvious that their value is quite limited.[4,41]

In a study[4] of 172 cases of hepatitis, forty-one cases of cirrhosis and seventy-five cases of extrahepatic biliary obstruction, both the indirect and direct reacting bilirubin was increased in the obstruction as well as in the parenchymal group.

The results in Table IV leave no doubt in our minds as to the unreliability of these tests for differentiating causes of jaundice.

Cephalin Flocculation

The Hanger's test is a satisfactory index of the activity of parenchymal damage in the absence of hepatocellular damage complicating bile duct obstruction.[4,14] A positive reaction is apparently due to changes in the globulin fractions of the serum occurring with certain types of inflammatory and degenerative changes. It may be an index of liver cell irritation or damage rather

than a measure of the functional capacity of the liver.[8,12] It is more likely to be positive in diseases characterized by diffuse parenchymal involvement, especially cirrhosis.[2,4,9,18,24,37] Rosenberg[24] found the test of value in the early diagnosis of obstructive and parenchymatous jaundice. A negative or slightly positive reaction indicates an obstructive process and a moderate to strongly positive reaction denotes parenchymatous jaundice. Hanger[9] reported a negative or at the most a 1-plus flocculation in all of twenty-five cases of obstructive jaundice, and a moderate to strongly positive reaction in thirty-three of thirty-eight cases of hepatitis and cirrhosis. Hogland and Shanks [13] found a moderate to strongly positive flocculation in 115 of 125 cases of infectious hepatitis. Barker[2] found a moderate to strongly positive reaction in 50 to 75 per cent of 1,172 cases of hepatitis in the prodromal stage, with over 90 per cent positive in the acute icteric stage during the first weeks of the disease. In forty-seven cases of acute hepatitis without jaundice the reaction was positive in 53 per cent of cases. At the Presbyterian Hospital in New York[8] seventy out of seventy-seven cases of obstructive jaundice gave a negative reaction, while forty-eight out of sixty cases of catarrhal jaundice showed either a 3- or 4-plus flocculation.

The test is usually strongly positive in cases of cirrhosis but may be negative in the quiescent or healed stage. Therefore, a negative reaction does not exclude the diagnosis.[9] It is believed to be of prognostic value in both acute hepatitis and cirrhosis. A persistently strong positive reaction is of serious prognostic significance.[4,9,15,26] Hanger[9] found a definite correlation between the degree of flocculation, clinical course and the symptomatology in a study of forty selected cases of cirrhosis, chiefly of the alcoholic type. Some of the cases were followed three years and longer, and in seventeen cases which showed a persistently strongly positive reaction, twelve deaths occurred. In comparison, only three deaths occurred in twelve cases which showed a progressively diminishing reaction, and three in eleven cases which showed a persistently weak or negative reaction. In the same study no correlation was found between the degree of flocculation and the presence or absence of ascites. However, in the presence of jaundice and ascites or of jaundice alone, the test was rarely, if ever, negative.

Whether cirrhosis is the end of stage of fatty infiltration, or whether a fatty liver is especially more subject to damage by the unfavorable condition that may co-exist, is still a debatable question. Observations[9] however, favor the latter view, for a positive reaction seldom appears in fatty infiltration unless inflammation or acute degenerative changes are present.

If we disregard a 1-plus reaction as of no practical significance, then our series (Table V) collaborates the observation of others in that the cephalin flocculation is usually moderate to strongly positive in diseases characterized by diffuse parenchymal involvement. In our series (Table V), forty-nine of fifty-two cases (94.2 per cent) of hepatitis and thirteen of fifteen (86.6 per cent) of cirrhosis showed a 2- to 4-plus reaction. In comparison, 64.3 per cent of cases of neoplastic jaundice, 88.3 per cent of cholelithiasis and 85.8 per cent of common duct calculi showed a negative to 1-plus reaction.

TABLE V. CEPHALIN FLOCCULATION

Condition	No. of Cases	Negative	1 Plus	2 Plus	3 Plus	4 Plus	Per-centage
Hepatitis	52	1	2	8	22	19	94.2
Cirrhosis	15	1	1	2	7	4	86.6
Neoplastic	14	7	2	1	3	1	35.7
Cholelithiasis	17	10	5	1	1	0	11.7
Common Duct Stone	7	5	1	1	0	0	14.2

Urine and Stool Urobilinogen

Normally, much of the bilirubin of the bile entering the intestines is changed to urobilinogen by bacterial action. A certain portion of this decomposition product of hemoglobin is absorbed into the portal circulation and passes to the liver where it appears to be converted to bilirubin and re-excreted into the bile. The latter part of this cycle has been termed the enterophepatic circulation of bile pigment.[4,33,34,37,39]

The urine normally contains 0 to 4 mg. per twenty-four hours, usually ranging between 0.5 to 2 mg.[37,38] It usually does not exceed 3 mg. per twenty-four hours.[10,37] The urobilinogen of the stool varies from 40 to 280 mg. per day, the average being 100 to 250 for a four-day period.[35,37,40]

Persistent absence of urobilinogen from feces and urine indicates that bile is not entering the intestines and is usually the result of complete obstruction of the biliary passages by carcinoma. However, this occasionally occurs as a result of an impacted stone in the common duct, severe acute hepatitis, or complete cicatricial stricture of the duct.[32,36,41]

In acute hepatitis and cirrhosis, the normal "resynthesis" of absorbed urobilinogen to bilirubin is interfered with, and excessive amounts of urobilinogen appear in the urine. Therefore, the presence of urobilinogen in the feces indicates the bile passages are not occluded, and excessive amounts of urobilinogen in the urine indicate some impairment of liver cell function or an associated hemolytic process.[32,36,41] The only satisfactory proof of complete biliary obstruction is very low levels of fecal and urinary urobilinogen.[25,31,41]

A study[36] of 135 cases of jaundice in hepatic disease showed that jaundice due to a stone is not accompanied by any considerable increase in the urine urobilinogen, unless complicated by acute cholecystitis, cholangitis,

TABLE VI. URINE UROBILINOGEN

Condition	No. of Cases	Negative	Per Cent	Above 4 mg.	Per Cent	Below 4 mg.	Per Cent	*Below 0.5 mg.	Per Cent
Hepatitis	41	3	7.3	26	63.4	12	29	2	16.6
Cirrhosis	10	1	10.0	7	70.0	2	20	0	..
Neoplastic	14	8	57.0	1	7.0	5	35.7	3	60
Cholelithiasis	11	5	45.4	5	45.4	1	9	1	100
Common Duct Stone	5	3	60.0	1	20.0	1	20.0	0	....

* Number of cases below 4 mg. which showed urine urobilinogen below 0.5 mg.

TABLE VII. STOOL UROBILINOGEN

Condition	No. of Cases	Negative	Per Cent	40–280 mg.	Per Cent	Below 40 mg.	Per Cent	*Below 5 mg.	Per Cent
Hepatitis	38	2	5.2	10	26.3	26	68.4	13	50
Cirrhosis	8	1	12.5	3	37.5	4	50.0	0	....
Neoplastic	12	4	33.0	1	8.3	7	58.3	6	85.9
Cholelithiasis	13	0	0	10	76.0	3	23.0	1	33.3
Common Duct Stone	5	2	40	1	20.0	2	40.0	2	100

* Number of cases below 40 mg. which showed a stool urobilinogen below 5 mg.

biliary cirrhosis or severe anemia. In forty-nine out of fifty-three cases (92 per cent) of jaundice due to primary or secondary carcinomatous involvement of the extrahepatic biliary tract, there was complete obstruction as shown by less than 5 mg. of fecal urobilinogen per day.[39] In a combined group of 118 cases of calculous and parenchymatous jaundice, only 7.6 per cent exhibit complete obstruction, with less than 5 mg. of fecal urobilinogen per day.[39] In the same series, in 55 per cent of cases of biliary tract carcinoma the fecal urobilinogen was less than 1.0 mg. per day, in contrast with 1.7 per cent in the combined calculous and parenchymal groups. In another series,[38] out of fifty-six cases of cancerous jaundice, exclusive of primary or metastatic carcinoma of the liver, the fecal urobilinogen was less than 5 mg. in fifty-three (96 per cent). In the same series, out of forty-nine cases of calculous jaundice and sixty-two cases of parenchymal jaundice, only five (4.5 per cent) excreted less than 5 mg. of urobilinogen per day in the feces. In 120 cases[16] of acute infectious hepatitis while the icterus was present, normal urobilinogen in the urine occurred in only 16 per cent of cases. In forty-one cases of cirrhosis, thirty-four (82.9 per cent) showed an increased excretion of urobilinogen in the urine. In contrast, only four out of six cases (66.7 per cent) of neoplastic jaundice and five out of ten (50 per cent) of hepatitis showed an abnormally high excretion.[34]

In neoplastic jaundice the urine and fecal urobilinogen are less than 0.5 mg. and 5 mg. respectively per day in 90 per cent of cases.[40]

In our series (Table VI) thirteen out of fourteen cases of neoplastic jaundice (92.7 per cent) showed a negative or a urine urobilinogen below 4 mg. In contrast, fifteen out of forty-one cases (36.3 per cent) of hepatitis and three out of ten (30 per cent) of cirrhosis showed a negative or a urine urobilinogen below 4 mg.

The stool urobilinogen (Table VII) in eleven out of twelve cases (91.3 per cent) of neoplastic jaundice was either negative or below 40 mg. Of the seven cases below 40 mg., six were below 5 mg. In the group of hepatitis, twenty-eight out of thirty-eight cases (73.6 per cent) showed either a negative value or below 40 mg. Of twenty-six cases below 40 mg., thirteen (50 per cent) were below 5 mg. In the group of cirrhosis, 62.5 per cent showed a negative value or below 40 mg., however, none of the cases were below 5 mg.

Cholesterol and Cholesterol Esters

The normal total blood cholesterol is 150 to 250 mg. per 100 c.c. of serum, with the esters comprising 60 to 70 per cent of the total.[14]

Hypercholesteremia is found in the majority of cases of uncomplicated extrahepatic obstructive jaundice. In such cases there is little or no significant alteration in the relative proportions of free and ester cholesterol.[4,37] However, hypercholesteremia occasionally occurs in mild hepatocellular jaundice, but much less frequently than in the obstructive type. In the former, the increase is usually in the free cholesterol fraction with the proportion of cholesterol esters diminished.[4,41]

A percentage proportion of esters below 60 per cent indicates a hepatocellular functional disturbance.[41]

In obstructive jaundice, there is usually a sharp rise in both the free cholesterol as well as the esters, which somewhat parallels the elevation of serum bilirubin. In contrast, there is a divergence, in the parenchymal jaundice, between the degree of serum cholesterol and bilirubin elevation.[4,32]

In acute or severe forms of hepatitis, the value for cholesterol may be decreased or normal, and the esters may diminish or disappear.[32,42] In a group of 105 cases[7] with obstructive jaundice, eighty-two (78 per cent) showed a total cholesterol of more than 300 mg. The esters were above 150 in seventy-nine (75 per cent) of the cases. Patients with obstruction of the biliary passages by carcinoma had a more striking hypercholesteremia than did those with obstruction due to a stone or stricture. In only eleven (10 per cent) of 111 cases of diffuse parenchymatous disease was the total cholesterol over 300 mg. In seventy-five (slightly over 67.5

TABLE VIII. CHOLESTEROL AND CHOLESTEROL ESTERS

Condition	No. of Cases	Total Cholesterol				Cholesterol Esters			
		Above 300 mg		Below 150 mg.		No. Below 60% of Total	Per Cent	No. Above 60% of Total	Per Cent
		No.	Per Cent	No.	Per Cent				
Hepatitis	48	5	10.4	8	16.6	41	85.2	7	14 9
Cirrhosis	16	0	....	2	12.5	15	93.7	1	6.2
Neoplastic	12	1	8.3	6	50.0	0	....	12	100 0
Cholelithiasis	19	1	5.3	5	26.3	16	84 3	3	15.8
Common Duct Stone	7	3	42.8	0	....	6	85.7	1	14.2

TABLE IX. GALACTOSE TOLERANCE

Condition	No. of Cases	3 Gm. or Less	Percentage	Greater Than 3 Gm.	Percentage
Hepatitis	42	6	14.3	36	85 7
Cirrhosis	11	3	27.3	8	72 7
Neoplastic	10	9	90.0	1	10.0
Cholelithiasis	13	8	61 6	5	38 4
Common Duct Stone	6	3	50.0	3	50 0

per cent) the total cholesterol was normal or slightly decreased but the esters were definitely decreased.

In our series (Table VIII) of the combined group of hepatitis and cirrhosis totaling sixty-four cases, only five (10.4 per cent) showed a total cholesterol above 300 gm., and ten (15.6 per cent) were below 150 mg. In this same combined group of hepatocellular impairment, fifty-six (87.5 per cent) showed the cholesterol esters to be below 60 per cent of the total. In all cases of neoplastic jaundice the cholesterol esters were above 60 per cent of the total. Of the common duct calculi 42.8 per cent showed a total cholesterol above 300 mg., and 85.7 per cent showed the cholesterol esters to be below 60 per cent of the total.

Galactose Tolerance

The galactose tolerance test is based on the ability of the liver to convert this sugar into glucose. If this conversion does not take place the galactose is completely excreted in the urine.[34] In the absence of diabetes, normally less than 3 grams of the sugar is excreted in 5 hours.[4,41] Excretion of more than 4 to 5 grams is indicative of severe hepatic impairment.[4,26,41] Although a positive galactose test is almost the rule in acute hepatocellular jaundice of average severity, a negative response may occur in mild or long standing cases.[1,4,26] It may be positive in long standing obstructive jaundice because of secondary parenchymal liver damage.[1,4,26]

A normal response does not exclude the possibility of parenchymal involvment and a borderline positive test should not be regarded as conclusive evidence against the presence of a mechanical biliary obstruction.[1,41]

The test does not uniformly distinguish between obstructive and hepatocellular jaundice, but it may furnish corroborative proof in doubtful cases.[1]

At the Mayo Clinic[41] the test was found to be mildly positive in 50 per cent of malignant obstruction cases and in 25 per cent of cases of obstruction due to a stone or cicatricial stricture. A positive response may be obtained in 30 to 45 per cent of patients with obstructive jaundice of various types.[1] In sixty-five cases of hepatitis, the test was positive in sixty-one (93.8 per cent). Of twenty cases of obstructive jaundice, less than 3 grams were excreted in all cases regardless of the duration of the jaundice or cause of the obstruction.[27] However, in a group of 167 cases with a normal synthesis of hippuric acid, only 7 per cent had abnormal excretion of galactose.[6] The test is more likely to be positive with diffuse hepatitis than with cirrhosis or neoplasm.[34]

In our series (Table IX) thirty-six out of forty-two cases of hepatitis (85.7 per cent) and eight out of eleven cases of cirrhosis (72.7 per cent) showed a positive test. However, only 10 per cent of the cases of neoplastic jaundice, 38.4 per cent of the cases of cholelithiasis, and 50 per cent of cases with common duct stone showed a positive test.

Hippuric Acid

The test depends on the ability of the liver to furnish glycine to permit the synthesis of hippuric acid from benzoic acid.[4,14,41] Normally 3 grams of benzoic acid in the form of hippuric acid is excreted in the urine in four hours after the ingestion of 6 grams of sodium benzoate.

A low output of hippuric acid is strong, but not conclusive evidence of functional liver impairment.[21,26] Excretion below 3 grams indicates hepatic insufficiency, provided renal function is normal and the volume of urine is adequate.[4,26,37,41] The results of this test parallel those obtained with the bromsulphalein test in patients without jaundice.[32,41]

In two instances the test was of little value in a differential diagnosis as it showed some degree of reduction in practically every type of liver disease.[21,25]

The oral hippuric acid test shows practically no correlation with the clinical condition of the patient. It is frequently relatively low in the convalescent period from infectious hepatitis, and even after the oral administration of amino acetic acid in the form of gelatin just prior to the test, normal excretion occurred in 153 out of 156 cases.[2] In a study[6] of 381 patients with suspected liver disease, 167 (43.9 per cent) showed a normal excretion of 3 grams or more: 134 (35.9 per cent)

showed 2 to 3 grams; forty-nine (12.8 per cent) showed less than 1 gram in the urine.

In a group of non-obstructive jaundice, including acute hepatitis, metastic carcinoma of the liver and cirrhosis, 89 per cent of forty-six cases, using the intravenous route, and 52 per cent of nineteen cases, using the oral route, showed a positive test. In forty-seven cases of proven cholelithiasis the intravenous test was positive in 53 per cent, as compared to 6 per cent of fifteen cases in which the oral test was used.[17]

The test was found to give low results in cases of catarrhal jaundice, acute and chronic hepatitis, usually in cases of liver metastasis and in cases of cirrhosis. Normal results are obtained in uncomplicated cholecystitis and cholelithiasis, including obstruction, as the result of a stone in the common duct.[21,22,23] The test is thought to be valuable in differentiating between intrahepatic jaundice from that due to obstruction by a stone in the common duct. However, an obstruction of long duration as well as carcinoma of the head of the pancreas may lead to liver cell damage and therefore, give low results.[23]

In one study[4] the hippuric acid excretion was less than 2.5 gm. in 91 per cent of 270 cases of hepatitis, in 87 per cent of seventy-six cases of cirrhosis, in 63 per cent of 136 cases of common duct stone and in 43 per cent of sixty-seven cases of carcinoma of the pancreas.

In our series (Table X), using the oral test, the excretion was less than 3 grams in 81.6 per cent of cases of hepatitis, in 80 per cent of cirrhosis and in 60 per cent of common duct stone. However, the results were 3 grams or above in 70 per cent of neoplastic jaundice and in 63.6 per cent of cholelithiasis.

TABLE X. HIPPURIC ACID

Condition	No. of Cases	Less Than 3 Gm.	Percentage	3 Gm. or More	Percentage
Hepatitis	38	31	81.6	7	18.4
Cirrhosis	10	8	80.0	2	20.0
Neoplastic	10	3	30.0	7	70.0
Cholelithiasis	11	4	36.4	7	63.6
Common Duct Stone	5	3	60.0	2	40.0

Bromsulphalein

This test appears to be a measurement of the excretory function of the liver. Normally not more than 10 per cent of the dye is retained in the blood thirty minutes after administration. Not more than 5 per cent remains in the blood at forty-five minutes and none after one hour.[37,41]

The test is fairly delicate in detecting liver dysfunction in the absence of jaundice, but is generally positive in the presence of an icterus index greater than 20 units or a serum bilirubin greater than 2.0 mg. per 100 c.c.[4,10,1432,37,41] A positive test indicates some degree of liver injury but a negative test does not rule it out.[34]

In the presence of complete obstruction of the common bile duct, the degree of retention of the dye in the blood increases progressively with that of bilirubin. Therefore, this test gives us very little information that cannot be obtained by the quantitative serum bilirubin.[4,14] However, incomplete obstruction, with superimposed chronic biliary tract disease and hepatocellular damage, may show a retention of the dye out of proportion to the degree of hyperbilirubinemia. It is, therefore, of value in the preoperative study of patients with cholelithiasis.[4,14]

TABLE XI. BROMSULPHALEIN

Condition	No. of Cases	No. of Positive	Percentage
Hepatitis	26	17	65.3
Cirrhosis	7	4	57.0
Neoplastic	6	3	50.0
Cholelithiasis	8	3	37.5
Common Duct Stone	3	2	66.0

Abnormal retention occurs almost invariably in acute and chronic disease due to hepatocellular damage, the degree of retention being roughly indicative of the extent of hepatic functional impairment and usually parallels the degree of hyperbilirubinemia. As in the case of obstructive jaundice, abnormal retention of dye may occur before and may persist longer than the hyperbilirubinemia.[4,14]

Retention of dye occurred in 96 per cent of cases in which there was evidence of parenchymal hepatic injury or even moderate mechanical obstruction of the bile ducts which had not yet produced clinically demonstrable jaundice.[32]

In a study of seventy-six cases[3] with active chronic hepatitis that failed to recover completely from acute infectious hepatitis, the bromsulphalein test was found to be the most valuable. In this series, 64 per cent of forty-four cases in the nonicteric group and 69 per cent of twenty-six cases in the icteric group, for an average total of 66 per cent, showed an abnormal retention of dye. In comparison, only 47 per cent of forty-seven cases in the nonicteric group and 76 per cent of twenty-nine cases in the icteric group, for an average total of 58 per cent, showed an abnormal cephalin flocculation.

The test was positive in nine of eleven cases (81.8 per cent) of common duct stone and in all of five cases of neoplasma.[27] The test was also positive in thirty-seven of forty-one cases (90.2 per cent) of cirrhosis, in nine out of ten cases (90 per cent) of hepatitis, and in all of six cases of neoplasm.[34] In 42 per cent of fifty-two cases of proven cholelithiasis the test was likewise positive.[17]

In another series[4] the retention of dye occurred in 80 per cent of 270 cases of acute hepatitis, in 68 per

TABLE XII. SERUM ALBUMIN

Condition	No. of Cases	Below 4 gm.	Percentage
Hepatitis	19	4	21 0
Cirrhosis	13	8	61 6
Neoplastic	9	4	44 4

cent of seventy-six cases of cirrhosis, and in 100 per cent each of 136 cases of common duct stone and 67 cases of carcinoma of the pancreas.

In our series (Table XI), 65.3 per cent of cases of hepatitis and 57.7 per cent of cirrhosis showed an abnormal retention. In comparison, 50 per cent of cases of neoplastic jaundice, 37.5 per cent of cholelithiasis, and 66.6 per cent of common duct calculi showed an abnormal retention.

Serum Protein

The protein of serum is normally 6 to 8 grams per 100 c.c.[4,14,,41] The serum proteins are usually altered in chronic diffuse liver disease with a reduction chiefly in the albumin fraction and an increase in the globulin. There is often a reversal of the albumin-globulin ratio, which is an important factor in the production of edema and ascites.[4,34,37,41] Total values as low as 3 grams per 100 c.c. have been reported in cirrhosis. The increase in the globulin fraction is more pronounced in chronic hepatocellular disorders than in biliary obstruction, which is usually not accompanied by a decrease in the serum albumin unless it is of long duration. However, a reduction in the serum protein is sometimes seen in acute hepatitis and chronic passive congestion.[4]

The serum albumin was less than 4 gm. in 30 per cent of 270 cases of acute hepatitis, in 63 per cent of seventy-six cases of cirrhosis, in 70 per cent of fifty cases of congestive heart failure, in 69 per cent of 136 cases of common duct stone, and in 79 per cent of sixty-seven cases of carcinoma of the pancreas.[4] The albumin concentration was under 4 gm. in thirty-three of forty-one cases (80.5 per cent) of cirrhosis.[34]

In our series (Table XII), the serum albumin was below 4 gm. in four out of nineteen cases (21 per cent) of hepatitis, in eight out of thirteen (61.6 per cent) of cirrhosis, and in four out of nine (44.4 per cent) of neoplastic jaundice.

Liver Punch Biopsy

The addition of liver biopsy to laboratory tests affords an unparallel means of correlating functional with histologic changes. The value of this procedure in the differential diagnosis of jaundice cannot be overemphasized, and in equivocal cases of diffuse diseases such as hepatitis and cirrhosis an absolute diagnosis can be made.

The manifestations of cirrhosis are so varied and so often preplexing that the clinician needs all available aids in making a diagnosis.[12]

The danger of death from hemorrhage should not be a stumbling block in the routine performance of this procedure, providing the prothrombin, clotting and bleeding times are checked prior to the procedure. There are only twelve deaths reported in the literature ascribed to needle biopsy, and most of these occurred during the early days of trial of this procedure.[11]

At the University of Minnesota needle biopsy had been attempted in eighty cases since October, 1942,[11] and was found to be of great value in the clinical study of liver diseases as well as a great diagnostic aid.

One can expect reasonably good results in cases of cirrhosis and acute hepatitis. However, it is conceivable how a carcinoma nodule might be by-passed.[11,12,28]

In our series of fourteen cases in which a clinical diagnosis of hepatitis was made, the liver biopsy diagnosis did not confirm the clinical diagnosis in six (42.8 per cent), primarily due to inadequate biopsy material. The diagnosis of cirrhosis by biopsy in ten cases was confirmed by autopsy in all cases. In eight cases clinically diagnosed as carcinoma, a liver biopsy confirmed the clinical diagnosis in only three (37.5 per cent).

Conclusion

Our broad statistical study of the various liver function tests does not show their true usefulness. When many other factors of the clinical history and physical findings are taken into account, the efficacy of some of the tests in differentiating "surgical" from "medical" jaundice is greatly increased. Using our figures, which check closely with those found in the literature, one can see the value of multiple tests. If, for instance, the cephalin flocculation test is 75 per cent accurate, add to this the roughly similar accuracy of several tests and the end result of the combination will be well worth the effort of running the series. A long experience in the interpretation of the results of these tests is indeed valuable. Tests other than those we have reviewed, including the thymol turbidity, alkaline phosphatase and the duodenal drainage, have proved their place in this difficult field of medical diagnosis.

Studies of the blood bilirubin are useful in determining the amount and progress of bile retention. Any attempt at using the various Van den Bergh tests for differentiating the diseases with jaundice is subject to too much error and should be discouraged.

The cephalin flocculation test is a fairly reliable means of differentiating diffuse parenchymal damage from that due to an obstruction of bile ducts. In our series, forty-nine of fifty-two cases (94.2 per cent) of hepatitis and thirteen of fifteen (86.6 per cent) of cirrhosis showed a 2- to 4-plus reaction. In comparison, 64.3 per cent of cases of neoplastic jaundice, 88.3 per cent of cholelithiasis, and 85.8 per cent of common duct calculi showed a negative to 1-plus reaction.

Very low levels of urine and fecal urobilinogen are satisfactory proof of complete biliary obstruction. In our series of neoplastic obstructive jaundice, 92.7 per cent showed a urine urobilinogen that was negative or below 4-mg. and 91.3 per cent showed the stool urobilinogen to be either negative or below 40 mg. However, 36 per cent of forty-one cases of hepatitis had a negative or below 4 mg. per cent level of urobilinogen.

Hypercholesteremia, above 300 mg. per 100 c.c., is frequent (42.8 per cent) in cases of common duct cal-

culi, while only 10.4 per cent of the combined group of hepatitis and cirrhosis have a total blood cholesterol above 300 mg. Blood cholesterol ester levels must be interpreted with much caution. When they fall below 20 or 30 per cent of the total cholesterol, diffuse disease of the liver is indicated especially when successive tests reveal a continuous drop. Small decreases of the ester below 60 per cent of the total are of no significance as a differential test.

In our combined series of hepatitis and cirrhosis, the galactose tolerance test was positive in 86.6 per cent of cases, as compared to 10 per cent of cases of neoplastic jaundice, 38.4 per cent of cholelithiasis, and 50 per cent of common duct stone.

Using the oral test, less than 3 grams of hippuric acid was excreted in the urine in 81.6 per cent of cases of hepatitis, 80 per cent of cirrhosis and 60 per cent of common duct stone, while in neoplastic obstruction of the common duct and cholelithiasis, 70 and 63.6 per cent respectively showed an excretion of 3 grams or more. The intravenous hippuric acid test may be a means of increasing the diagnostic laboratory accuracy.

The bromsulphalein excretion test has its use limited to the detection of liver cell disfunction in the absence of jaundice. The results of our short series of studies of blood proteins confirms the usually accepted interpretation of this test.

When a dependable method of preventing bleeding from the site of a liver punch biopsy is found, this test will be the best for demonstrating diffuse diseases such as hepatitis and cirrhosis.

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from December issue)

Milton A. Trow, the youngest child of Dr. Augustus Howland Trow, was born at Montezuma, New York, on May 10, 1853, and came with his parents and his two brothers, Henry Nathaniel and Willam Howland, and his one sister, Ellen Acenith Trow, to Chatfield, Fillmore County, Minnesota, in 1856 when he was about three years old. In Chatfield he grew up, received his early education and spent much of his life. His wife was May E. Dann, to whom he was married in Chatfield on December 18, 1876, the daughter of Mr. and Mrs. Amos D. Dann, originally of Chatfield, later of Jackson, Minnesota.

In 1876 Milton Trow was graduated from the College of Physicians of Keokuk, at Keokuk, Iowa, and began the practice of medicine in association with his father in Chatfield and a wide surrounding territory in Fillmore and Olmsted Counties. In the following year there were in the county three Drs. Trow, when William H. Trow, newly graduated from the same medical school at Keokuk, began his medical practice, not in Chatfield, but in the village of Fillmore, some miles to the southeast.

Early in his professional career Milton Trow, newspaper notices would indicate, began lecturing on anatomy, physiology and phrenology in villages of the two counties. As has been noted, he was one of the physicians of the late seventies who co-operated with the State Board of Health in the preparation of reports on local conditions of health and sanitation; and in 1880 he was appointed county physician in Elmira and Orion Townships of Olmsted County. Under the "Diploma Law" of 1883 he became the possessor of state certificate No. 874 (R), given on April 19, 1884, filed in Fillmore County on September 14 of that year. By then he was announcing himself in a professional card as a physician and surgeon who would attend to all professional calls, day or night, promptly. And in 1884, concerned with farming as well as with medicine, he advertised "a lot of 90 day yellow dent corn for sale."

There occurred in 1883 an incident in his medical practice that was disagreeable but that ultimately did him no harm and perhaps was helpful. The fact that Dr. Franklin Staples, of Winona, was called in consultation in the case concerned and that a letter from Dr. Staples to Dr. Augustus H. Trow subsequently was published in the *Chatfield Democrat* on March 10, 1883,

at the request of the senior Dr. Trow, "for the especial benefit of those who prefer to spread false reports rather than the truth," lends interest. The letter follows:

Winona, February 24, 1883.

I attended the late Mr. ————————in consultation with Dr. M. A. Trow on Saturday the 19th inst. In my opinion the patient was suffering from a complication of diseases, in which the liver and right lung were involved. I think there was and had been for some time, a pneumonia in the posterior lobe of the right lung, also enlargement of the liver and threatened hepatic abscess. I thought the treatment in the case had been and was good. I advised its continuance in the main and suggested the use of nitro muriatic acid. I spoke openly and plainly and gave the above opinion both to Dr. Trow and to the friends by themselves, and have not expressed any other opinion, nor had any other to express. The treatment was the same I should have given. I regarded the prognosis of the case as extremely unfavorable.

Beginning in the early eighties Dr. Augustus H. Trow and Dr. William H. Trow became increasingly interested in the agricultural properties which they had acquired in Dakota Territory and in 1887 they went west to settle in the new country. After their departure Milton Trow practiced alone from his headquarters in Chatfield, and in the ensuing twelve years he greatly extended his work. In 1892 he had established branch offices in Olmsted County, one at the Russell House in Pleasant Grove and one at the Everett House in Eyota, in each of which he spent one day a week. It was during this period also that he achieved his well-earned reputation as an able obstetrician, receiving praise from Dr. J. B. McGaughey, at a meeting of the Winona County Medical Society: "Over fifteen years' practice without a fatal case or having to be helped is a record of which any man might be proud." (*Chatfield Democrat,* October 16, 1892.)

In the winter of 1893, perhaps then in the period of his heaviest professional activities, Dr. Trow on a night in early March, when the roads were almost impassable, was injured severely about the head and shoulders when his cutter overturned. Already in a state of extreme fatigue (judging from detailed newspaper accounts of certain incidents in his practice), after the accident for many weeks he was seriously ill, having received a concussion of the brain, and was the subject of medical consultation to which were called Dr. J. P. Waste, of Plainview, Dr. A. W. Stinchfield and Dr. W. A. Allen, of Rochester, and Dr. C. McH. Cooper, of Chatfield; Dr. A. H. Trow had come from Dakota. Not long afterward, on the advice of his physicians to go somewhere "where absolute quiet and freedom from visitors and business could be obtained," Dr. M. A. Trow and his wife and their little daughter, Ruth, went to Jackson, Minnesota, for a period of his convalescence, to stay with Mrs. Trow's parents.

It was a year or two later, when relatives were hoping that Dr. Trow would settle permanently in Jackson, that friends in Chatfield sent to the editor of the *Chatfield Democrat* for publication a sincerely eulogistic set of reasons why they would "dislike to have him go." He was, they said, a man of good moral character, a good citizen, a true Christian gentleman. As an able practitioner and a completely successful surgeon for more than twelve years, he was greatly in demand. He stood at the head of his profession as president of the Fillmore County Medical Society, was an officer and an active member of the Olmsted County Medical Society and an honorary

member of the Winona County Medical Society. He had done more to elevate the standards and maintain the dignity of the medical profession than any other man in southern Minnesota. His worst fault was that he was a poor collector and that he did too much charity work for his own good (his generosity being "inherited from his father"). "We could get 2,000 signatures on petition requesting him not to go. We know that family ties are strong, but we hope the Doctor will not leave us." Dr. Trow did remove to Jackson, however, although not until late in the nineties. In the meantime, in 1894, Mrs. Trow was seriously ill; in that year also Dr. Trow was offered, but did not accept, a post as district surgeon of the Chicago and Northwestern Railroad, and it was stated, again in the local *Democrat*, that he had two opportunities to join medical firms in Winona.

It was in the nineties and soon after the turn of the century that Dr. Trow was most active in the work of medical associations. On June 19, 1890, at the twenty-second annual meeting of the organization, he was elected to membership in the Minnesota State Medical Society, and in 1892, when the Southern Minnesota Medical Association was organized at Winona, on July 28, he was one of the charter members and was elected second vice president. It is interesting to note that at the initial meeting Franklin Staples, of Winona, was president; Nathaniel S. Tefft, of Plainview, first vice president, and Horace W. Witherstine, of Rochester, secretary and treasurer. Dr. Trow's name continued on the roster through 1897. After moving, probably in 1899, from Chatfield to Jackson, in Jackson County, he was affiliated with the Jackson County Medical Society, as witness the following item which appeared in the *Northwestern Lancet* in February, 1901: Dr. M. A. Trow of Jackson, Minnesota, contributed a very sensible article in the form of a letter, to a local paper on the subject of physicians' fees. Dr. Trow, as president of the Jackson County Medical Society, which voted unanimously for the common country fee schedule, was charged with forming a trust. Dr. Trow will never suffer much from such a charge in or out of Jackson County."

In May, 1902, it was announced in the *Northwestern Lancet* that Dr. M. A. Trow, formerly of Chatfield, Minnesota, had located at Lamberton, Redwood County, and had formed a partnership with Dr. Crandall of that place. Evidently the arrangement was of short duration, for in March, 1903, Dr. Trow, recently of Currie, in Murray County, had removed to Avoca, a few miles south in the same county, and there he remained until after 1917; in the issue for 1918 his name appeared for the last time in the directory of the American Medical Association, followed by the symbol for "Address Unknown.".

In these later years his health had begun to fail and in the next half decade he carried on but a desultory medical practice. He finally returned to his old home of Chatfield, to be among the associations of early years, although no member of his immediate family then was residing in the village. His wife had died some years previously; of the three children, two had died in infancy and the third, Ruth, lived to the age of only sixteen or eighteen years. A little story concerning those children has come down through reminiscent channels. On an occasion when Ellen Acenith Trow Bibbins was visiting her brother in Chatfield, when he was a young physician, Ruth, then a very small girl, was gaily pounding her chair with her silver drinking cup. "Mit," said the sister, "she will spoil that chair and cup." To which Dr. Trow replied, "I hope she does. We have had two

little ones leave us without a scratch to know they had ever been here, and if she goes, I want something as a reminder."

Toward the end of his life, no longer practicing medicine, Dr. Trow closed his office in Chatfield, which for a time he had maintained in the building of the Root River State Bank; in those terminal months the Chatfield Meridian Lodge of the Masons gave him the fraternal aid and care of which he was in need.

Milton A. Trow, who lives in the kindly memories of his old friends and associates, died suddenly in Chatfield on March 16, 1923. He was survived by his sister, Ellen Trow Bibbins, who then was living in Tulsa, Oklahoma; Mrs. Bibbins, who was married to Edward Bibbins, of Chatfield, on July 26, 1864, died in Tulsa at the home of her only child, Zilla Eulalie (Mrs. Samuel Alexander) Patrick, on February 18, 1936; Mr. Bibbins had died in Chicago in 1902. The eldest of the Trow brothers, Henry Nathaniel, had died in Des Moines, Iowa, on January 31, 1908. Notes on Dr. William Howland Trow follow this sketch.

William Howland Trow, the second of three sons and the third of the four children of Dr. Augustus Howard Trow, was born at Victory, New York, on August 8, 1851, and was about five years old when the family settled in Chatfield, Fillmore County, Minnesota, in the summer of 1856.

With his sister Ellen Acenith and his brothers Henry Nathaniel and Milton Augustus, William H. Trow went to school in Chatfield. In due time he received his formal medical training at the College of Physicians and Surgeons of Keokuk, Iowa, from which he was graduated on February 13, 1877, a year after Milton Trow had taken his degree at the same school. Before he began his medical study, William Trow had been married to Agnes M. Simpson, of Chatfield, on December 25, 1872. When he returned to Fillmore County from Keokuk, he settled with his family in Fillmore Village and there and in Wykoff he carried on his medical practice until he moved to Dakota Territory with his father in 1887. In Minnesota, on April 19, 1884, under the medical practice act of the preceding year, he received state license No. 916 (R), and his father and brother were licensed on the same day. And in Dakota, on July 11, 1887, both he and Dr. A. H. Trow, then residents of Carthage, Miner County, were licensed to practice in the territory. As noted previously, Dr. Augustus A. Trow had owned land in Dakota since the early eighties and it is probable that both he and William Trow had spent considerable time in the territory before they finally left Minnesota.

Dr. and Mrs. William Howland Trow were the parents of seven children, of whom the eldest two died in infancy; the others were Maude, Nina, Edith, Charles and Halcy. In the years at Carthage the family was affiliated with the Episcopal Church of Howard, South Dakota.

In 1901, Dr. Trow, accompanied by his immediate family and his father, moved from Carthage to Ethan, South Dakota, where he continued in active medical practice for about ten years. As noted, his mother had died in 1898 at Carthage; his daughter Maud (Mrs. Mack) died in 1902; his father died at Ethan in 1904. Early in 1920 Dr. Trow was ill for two months from cardiac disease; a stroke of paralysis hastened his death, which occurred ten days later, on April 5, 1920. He was survived by his brother and his sister Ellen; his wife, two sons, Charles S. and Halcy C. Trow, and one daughter, Mrs. Nina Oatbout, all of Ethan; one daughter, Mrs. Edith Swartz, of Parkston, South Dakota; and six grandchildren.

Herbert Eugene Twitchell, son of one of Chatfield's earliest and most respected pioneer physicians, mistakenly was said (in a Minnesota medical journal in 1929)* to have practiced medicine for many years in Chatfield. In correction, and as part of his father's story, a brief sketch of his life is given here.

Herbert Eugene Twitchell, the first white child native to the village, was born in Chatfield, Fillmore County, on March 27, 1855, the son of Dr. and Mrs. Refine W. Twitchell. With his sisters, Sarah Edna, Carpie and Martha Arnold (his only brother, Steven, died in infancy) he received his early education in the schools of Chatfield, attending some of his classes in the stone building that had housed the Chatfield Academy in its short but honorable span. After his graduation from the Chatfield schools, he was a student at the Winona Normal School and thereafter taught school for a while before beginning his medical training at the Louisville (Kentucky) Medical College. From Louisville he was graduated in 1877, the winner of a scholarship, and shortly afterward began the practice of medicine in the little village of Darrtown, Butler County, Ohio. In 1882 Dr. Twitchell took postgraduate work at the Miami Medical College, Cincinnati, from which he received a degree, and in 1885 studied at the Cincinnati General Hospital. On April 18, 1886, he opened an office at Hamilton, also in Butler County, where he resided and followed his profession until a few years before his death.

During the Spanish-American War of 1898 Dr. Twitchell was appointed a surgeon of the First Volunteer Infantry of Ohio, with the rank of captain, and so served until the end of the war. In 1915 he was named surgeon of the Central Branch of the National Military Home at Dayton, Ohio, but did not accept the position. He was a member of the Sons of the American Revolution and of the Military Order of the Loyal Legion of the United States Army, which is composed of the sons of officers of the Armies of the United States.

In 1878 Herbert E. Twitchell was married to Carroline A. Spencer, of Louisville, Kentucky, and of this union one child was born, Anna Spencer Twitchell. A second marriage, to Elizabeth Deuscher, of Hamilton, Ohio, took place in June, 1896; the only child was Herbert D. Twitchell, who died at the age of thirty years, from pneumonia, leaving a wife and two sons.

Dr. Twitchell died at the Dayton Military Home on March 4, 1929. Of his immediate relatives there were living in 1943 his daughter, Anna Twitchell (Mrs. Dwight S.) Person and his sister Arna (Martha Arnold; Mrs. W. J.) Broome, both of Los Angeles, and three grandsons, all in the armed forces; Dwight S. Person, Jr., Herbert Deuscher Twitchell and John Lee Twitchell. Anna Twitchell Person has gained some prominence as a writer of verse for leading periodicals throughout the country; her facility, she has said, has come down to her from her grandfather, Dr. Refine W. Twitchell, who wrote good verse, and from an uncle, John Weekes.

Herbert E. Twitchell, without pretension to writing, produced some verses in honor of Chatfield which were published in the *Chatfield Democrat,* in 1880, and because they concern the village and scenes familiar to many of the physicians mentioned in this account, a few lines are appended:

*Journal-Lancet, May, 1929, page 216.

Dear old Chatfield—how I love thee!
How I love thy very name —
How thine image comes before me,
Pictured out within my brain.
***
There's the mill and there's the meadow;
There's the creek and there's the pond;
There is dear old Root River,
With the woodland just beyond.
***
Dear old Chatfield! How I love thee!
Though far away my lot is cast,
How I hope in years that follow
To return to thee at last.

Refine Weeks Twitchell was born at Weybridge, Addison County, Vermont, on March 29, 1823, the son of Quaker parents, Jonas and Sarah Twitchell. Jonas Twitchell, son of Daniel Twitchell, was descended from old colonial stock; his first ancestor in America was Benjamin Twitchell, a founder of Dorchester, Massachusetts, one of two brothers who came from England to New England in 1630. Refine W. Twitchell was proud of the fact that his grandfather, Daniel, was an American soldier in the American Revolution, answered the call at Lexington, was wounded at Bunker Hill and was with Washington during the memorable winter at Valley Forge; Daniel Twitchell's Documentary War Record from the Revolution is cherished by the Twitchell family as one of its choicest treasures.

When Refine Twitchell was ten years old, his parents moved to Michigan and settled in Somerset, Hillsdale County. It was there that the boy completed his preliminary education and in due time decided to fit himself for the profession of medicine. In a biographical account in the Fillmore County History of 1882 it was stated that the young man began his medical study in 1845, at Dexter, Illinois; it may have been, however, at Dexter, Washtenaw County, Michigan, not far from his home and only a few miles northwest of Ann Arbor.

Because Refine W. Twitchell was an early student (1851-1852) at the Medical School of the University of Michigan and because he was one of the earliest representatives of the school to practice medicine in southern Minnesota, space is given here to suggest the details of his medical education. Michigan was the first pioneer state to recognize the importance of professional education in medicine. When the medical school was opened at the University of Michigan, in 1850, there was specified in its official announcement that its course of instruction was to run from the first Wednesday in October to the third Wednesday in April and was to consist of lectures, quizzes and a short course in anatomy. (This was, in fact, the curricular menu of all medical schools in the country at that time.) Its endorsement of the preceptor system, which was long to remain in use, was stated in the requirements for entrance: The student must present satisfactory evidence, first, that he had pursued the study of medicine and surgery for the term of three years with some respectable practitioner of medicine;† second, he must be of good moral character and also of such literary attainments as had been recommended by the National Medical Associ-

†In 1855, in emphasis of the value of preceptorship, the school in its annual announcement stated that "clinical instruction, it is believed, is far better imparted in the walks of private practice, especially in that section of the country where the student was to locate himself, than can be done even in the best regulated hospital. The hasty walks through the wards of a hospital furnish at best but a sorry substitute for the close and accurate study of cases as they occur in the professional rounds of the private practitioner."

ation, as follows: "A good English education, the knowledge of Natural Philosophy, the Elementary Mathematical Sciences, and such an acquaintance with the Latin and Greek languages as would enable the student to appreciate the technical language of medicine and read and write prescriptions." For graduation the student must have attended the full courses of lectures, the last of which must have been in the Medical Department of the University of Michigan; he must have submitted to the faculty an original thesis in his own handwriting on some medical subject; and he must have passed an examination, held at the end of the study, satisfactory to the faculty.

On completion of his work at the University of Michigan, in 1852, Dr. Twitchell began his practice of medicine in Somerset, his childhood home. On May 23 of that year he was married to Martha Jane Carpenter, of Albany, New York, who was born at Greenville, New Hapmshire, on April 6, 1831. Early determining to move westward, Dr. and Mrs. Twitchell, in 1854, with their infant daughter, Sarah Edna, only a few months old, traveled into Minnesota Territory and settled in Chatfield, a fledgling village which had been platted in the spring of 1854 and which lay in both Fillmore County and Olmsted County. And there, with a few fellow pioneers in a sparsely settled region, they met the adventures, discomforts and hazards of frontier life. Dr. Twitchell was the first physician in Chatfield Township of Fillmore County and also in Orion Township, Olmsted County.

In Chatfield, Dr. Twitchell, who was a man of ability and versatility, and many of the pioneer physicians possessed these qualities, engaged in various occupations which he found desirable or, perhaps, expedient, because on the frontiers in the fifties and later, conditions were such as to make the practice of medicine inadequate as a source of income. His professional card appeared in the first issue of the *Chatfield Republican*, on October 25, 1856: "Refine W. Twitchell, M.D., Physician and Surgeon. Will be found in his office on Main Street at all times except when absent professionally. Particular attention paid to surgery and diseases of women and children." And in the same autumn he had a card in the newly established *Chatfield Democrat* also, and continued thereafter to insert varied announcements in the two newspapers. By 1858 he found it necessary to act as pharmacist as well as physician and surgeon, and on the corner of Main Street that later was to be occupied by Easton's Bank, stood Dr. Twitchell's drugstore, the first in Chatfield. The building was constructed of logs and housed the shop in front, and in the rear, the physician's residence. In this house, on March 27, 1855, was born Herbert Eugene Twitchell, the first white child native to Chatfield Township, and in the next four years were born there Steven (who died in infancy) and Carpie, and in the later sixties Martha Arnold ("Arna").

By the summer of 1859 Dr. Twitchell's enterprise had expanded. His announcement of August 13, in the *Chatfield Democrat* was ethical and acceptable in the established tradition of the time for a physician-druggist:

R. W. TWITCHELL, M. D.
Dealer in
Drugs and Medicines
Paints, Oils and Chemicals, Pure Wines, and
Liquors for Medical Purposes. Trusses and Braces.
STRYCHNINE
A variety of Fancy and Toilet Articles
Particular attention paid to office prescriptions. Surgical operations performed at office and elsewhere.

It perhaps was in this shop* as a laboratory that he investigated the medicinal value (which he questioned) of oil from rattlesnakes.

In separate notices Dr. Twitchell, who was a skilled orchardist, announced that trees were available. And he early manifested interest in the land, for his name on old topographical maps indicate that R. W. Twitchell was the owner of tracts in various parts of Fillmore and Olmsted Counties, and it is said that in the archives of long-established law offices his name may be seen on many legal documents relating to the transfer of property.

That Dr. Twitchell was interested in educational progress is evidenced by the fact that when the Chatfield Academy was incorporated on February 25, 1856 (it was organized on May 29, 1856), he was one of the thirteen trustees and one of the executive committee of three. The academy, after its preliminary months, was housed in its own building, three stories high and of native stone, which stood on the south corner of block 27, just across the street from Dr. Twitchell's residence on the east corner of block 38; as was pointed out to the writer, the peculiarity of this description is owing to the fact that the original plat of Chatfield was laid out northwest and southeast, parallel to the bluff which flanks the village. The academy functioned for several years, an excellent educational institution known over a large region, until it was superseded by the schools of the state. In addition to his work for the academy Dr. Twitchell served also on the village school board, in 1855 and 1856 and again in 1860 and 1861.

During the Civil War Dr. Twitchell enlisted, in August, 1862, in the Ninth Minnesota Volunteer Regiment of Infantry, which was organized in the nation-wide response to the President's call of July 2 of that year for additional troops (300,000 men). On September 18 the regiment was announced officially to contain Companies A to K inclusive, with Charles W. Le Boutellier as surgeon and Refine W. Twitchell as first assistant surgeon. Dr. Twitchell was mustered in on October 6, 1862. In July, 1864, he was promoted to surgeon of the Seventy-second Colored Infantry and in that capacity served until the close of the war. Records have revealed that he thereafter served in army hospitals in the Department of Ohio until 1866 and that in this final period he was in charge of hundreds of cases of smallpox during an epidemic of the disease in virulent form. His vigilance and skill in the care of his patients were such that he saved them all and sent them out unmarked by scars of the disease. When he returned to Chatfield in the summer of 1866, Dr. Twitchell brought with him a black boy named Web, who had been assigned to him in the army as chore-boy and general factotum and who in Chatfield aroused great interest, inasmuch as he was the first Negro the children and even many of the adult residents of the village had seen. At the beginning of the Civil War Dr. Twitchell had in progress the building of a new, and, for those times, pretentious residence, a house of ten rooms; during his absence in the army Mrs. Twitchell supervised its completion. For many years the family occupied this home; in later times it once was occupied by Dr. Florence J. Halloran and once by Dr. Charles McH. Cooper. It was still known, in 1943, as "the Twitchell place."

At home again, in 1866, Dr. Twitchell, on resuming his medical practice, published the following notice: "MEDICAL AND SURGICAL: I am now ready to resume the practice of my profession, after an absence of four years; during which time I have been connected with the Union Army.

*In the possession of the doctor's youngest daughter, Arna (Mrs. Broome), of Los Angeles, is the worn remnant of the counter brush used by her father in the old log drug store; she has stated (1943) that the brush would be available for a local museum of relics.

I do this, believing that the experiences I have thus added to my former knowledge, will render me none the less efficient. Residence one block above Dickson's mill."

It was in 1866 that Dr. Twitchell identified himself most actively with the promotion of medical science locally by joining with a small group of physicians in organizing the Fillmore County Medical Society, at a meeting held on October 17 in the office of Dr. Lafayette Redmon in Preston. Dr. Twitchell was the first president of the society and he held the presidency for several consecutive terms, during the important organizational period and through 1869, in which year the state legislature, on March 9, approved an act directed at the elevation of medical practice in the state. In this period of professional prominence Dr. Twitchell was known in the county as a public speaker of ability on medical subjects; notices of his lectures, which were given without charge, appeared from time to time in the newspapers. In 1871 he became a member of the Minnesota State Medical Society, which had been revived in 1869, and in 1879, co-operating with the State Board of Health, he was one of the eleven physicians of the county who supplied data for the official reports on the incidence of diphtheria. The chief of his earliest medical contemporaries in Chatfield was Nelson W. Allen, Isaac S. Cole, Luke Miller and Augustus H. Trow. In 1869 came H. Thomas and from the seventies on into the nineties there were many others, some of whom stayed a short time and some for many years. A few of them were John C. Dickson, Milton A. Trow, John C. Fate, Aaron M. Stephens, Florence J. Halloran and Charles McH. Cooper.

Although after the Civil War Dr. Twitchell resumed his medical practice and related activities, his health had been so depleted by his arduous military service that he no longer could carry on all of the strenuous duties of a country practitioner, and as time went on he became increasingly engaged in occupations other than medical. In the early eighties this physician entered seriously into civic affairs, especially in the legal department, serving various terms as village justice; the last time, in 1887, he was named thus in a special act of the legislature incorporating the City of Chatfield.

In 1885 Mrs. Twitchell, because of her failing health, moved from Chatfield to Santa Barbara, California, and her daughter Carpie soon followed to be her attendant and companion. Dr. Twitchell, who also was now almost an invalid, remained for a few years in the rambling old homestead with the daughter Arna and a little granddaughter, Anna Spencer Twitchell, whose mother had died, but in 1891 these three moved permanently from Chatfield to Hamilton, Ohio, the home of Dr. Herbert E. Twitchell. A year later Dr. Refine W. Twitchell joined his wife in California, and there he died on October 9, 1893; Martha Carpenter Twitchell passed away on June 17, 1896; both are buried in the beautiful cemetery on the outskirts of Santa Barbara, overlooking the ocean.

Of the five children of the family, it has been stated that Steven died in infancy. Sarah Edna, the eldest, a graduate of the University of Minnesota, an able teacher in the schools of Minnesota and South Dakota and a successful business woman, for a time proprietor of the Flandreau Roller Mills, died in Flandreau, South Dakota, on December 25, 1901. Carpie was married to William C. Hall; Mr. and Mrs. Hall lived at different times in Santa Barbara and Long Beach and, finally, in Los Angeles. Arna became Mrs. William J. Broome; Mr. and Mrs. Broome lived in the East until

1911, since when they have made their home in Los Angeles (1943). Herbert E. Twitchell, M.D., died at Dayton, Ohio, in 1929.

In Chatfield there are those yet living who recall Dr. Refine W. Twitchell as a man of kindly and strong personality, a physician wise in his day, gentle with his patients and in his family, intrepid in the line of duty and service, civic and professional.

John Darwin Utley, born in 1866, a graduate of Rush Medical College in 1890, was licensed on July 8, 1892, to practice medicine in Minnesota and soon afterward he filed his certificate in Fillmore County. In that summer Dr. and Mrs. Utley came from St. Croix County, Wisconsin, to Spring Valley and established their home in the village. Their only child, a daughter who died in infancy, was born in Spring Valley.

For the greater part of twenty-four years, as nearly as can be determined, Dr. Utley followed his profession in the community, building up an excellent medical and surgical practice and holding the confidence of his patients and associates. Well into 1916 he was active in the Southern Minnesota Medical Association, which he had joined early after its organization in July, 1892, and also in the Houston-Fillmore County Medical Society, which was formed in May, 1904, giving papers at the meetings and serving on committees. In July, 1916, the *Journal-Lancet* announced that Dr. J. D. Utley of Spring Valley had taken over the Midway General Hospital between Minneapolis and Saint Paul and would continue its work, and he presumably left Spring Valley early in that summer.

In December, 1918, *Minnesota Medicine* carried an item stating that Dr. Utley, of Saint Paul, recently had been appointed a captain in the Medical Reserve Corps and had gone to Camp Cutler, Battle Creek. In the early twenties Dr. Utley, by then a resident of Minneapolis, left Minnesota for California; Mrs. Utley had died not long after they had moved from Spring Valley. For his first year or two in California Dr. Utley practiced medicine in Ocean Park, for the next six years in Montrose, and since 1931 he has been in La Crescenta (1943).

G. H. Vance was in the village of Fillmore, in Fillmore Township, in the early eighties, judging from a single entry (1880-1881) in the *Minnesota State Gazetteer and Business Directory.* His name was not found in any other directory, general or medical, nor has other reference to him been observed.

(To be continued in the February issue.)



A. E. CARDLE, M.D.

President, Minnesota State Medical Association

President's Letter

The Minnesota State Medical Association enters a new year in its progress. We should look forward to the coming year as a time for service to all. Important problems lie ahead. While at times great difficulties may arise, I have no doubt that with such a splendid membership as is possessed by our Association, whatever problems face us will be solved with purpose and wisdom. The privilege and honor to serve this membership as president is deeply appreciated.

As Sixth District councilor, I learned the value of the great instrument which our State Association has become, an instrument through which every doctor in Minnesota has an extraordinary opportunity to exert influence for the public good. That may seem like a broad statement to make, but let us analyze it for a moment—let us examine this instrument which we doctors in this state have created. Every good physician, we realize, by merely doing his job is carving himself an enviable record of "good works." The primary aim of medicine is service to humanity, particularly the relief of suffering and, if possible, its prevention. A physician who dedicates his life to that high purpose has outlined for himself a difficult assignment, one which will take an entire lifetime to complete and, even then, will never be quite finished. By joining the State Association, a physician takes on more than just his professional responsibility. He has accepted a place in the ranks of a body called "organized medicine," through which he will undoubtedly derive much personal benefit, but to which he will also have to contribute in order that it may be maintained. Physicians working individually can perform a great many social services, it is true; but physicians banded together in the cause of common good can do even more. This is the team work which is so necessary to the future of medicine. Only by so doing can we maintain the type of medical life for which we have striven. What gains have been made by organized medicine in the past have come through the unselfish service of men who have had vision. It is this vision which I hope every member in our Association can grasp. We need it now and shall need it in the days to come. The forces that are working to destroy our "way of life" must be fully understood by every member. These are serious times and need serious thought.

During my membership in this Association of ours, I have watched it become more and more a service organization. For example, countless times I have seen various groups or agencies come before our Council or our House of Delegates seeking our advice and looking to us for leadership in matters of public concern. Further proof that ours is a service organization is shown in the increasing number of problems undertaken by our hard-working scientific and economic committees. Rural health, nurse shortage, disease control, extension of medical service and other perplexing problems are under intensive study at the present time. Through the combined efforts of every member of the Association, these problems can one day be solved. Not only is there determination to work together within our own ranks, but there is also increasing evidence of a desire to unite our efforts with those of the other professions which are a part of the health service picture. We are just beginning to realize the tremendous possibilities of a joint-attack by all of the allied health professions on the problems that beset us. This, then, is the instrument which we have created—an organization through which we can pool our resources so as to amass sufficient strength to overcome the obstacles lying between us and the goals to be achieved.

In anticipating what lies ahead in the coming months, I am grateful for the fine spirit of cooperation which has been so carefully developed and encouraged by my predecessors in office. The officers who will serve you in the coming year fully appreciate the honor which has been accorded them. They will serve you faithfully and well, as their predecessors have done. They wish to know all of the needs of the Association and its members. As one of these officers I look forward to the pleasure of becoming more intimately acquainted with the component medical societies and their members.

My best wishes to you all for a happy, successful and progressive year.

A. E. Cardle

Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

NEW YEAR PROBLEMS

As we start the New Year, there is one outstanding need which towers over all others in its significance and that is the crying need for implementing the United Nations with an international force which will be effective in preventing war. All other needs—international or national—important as they are, are second in importance. If, in the setup of the United Nations, this cannot be accomplished, another organization which will provide an effective police power to prevent military aggression by any nation in the world, with membership open to all nations, seems to be the only answer. Another war involving the use of atom bombs, whose destructive power has been developed a hundredfold since the war, is unthinkable. Release, too, from the need of large military armaments would enable nations to devote their major energies towards reconstruction, for which there is such a woeful need today.

While we do not hesitate to express an opinion on the United Nations, the Marshall Plan is a controversial subject, involving continued shortages, continued high prices and high taxes in our country, and control of expenditures in foreign countries with eventual overproduction and probable repetition of the 1929 collapse.

On the home front there is the possibility that the Wagner-Murray-Dingell Bill will again be submitted for Congressional action. This, in our opinion, will be the most important decision Congress may be called upon to make. The fate of the bill will decide whether socialism in this country is to be extended to include medical practice or not.

Perhaps next in importance in our home economy is the need for a great reduction in the cost of our government. The innumerable bureaus in Washington and federal subsidies of states for activities which should be financed by the states themselves only serve to maintain taxes at rates which prove burdensome to all income groups and prevent financing of new industries. The government can do its part in breaking the vicious circle of high taxes, high wages, high costs of commodities, and high cost of government. Labor can do its part by going to work.

Our country with its vast resources and private initiative has always been able to meet both economic and political crises successfully. This has involved considerable muddling on occasion when economic laws have been interfered with. It is to be hoped that our law makers have come to realize that economic laws cannot be broken with impunity.

AMERICAN ACADEMY OF GENERAL PRACTICE

There has been a widespread feeling among general practitioners for some time that some steps should be taken to dignify their professional status. The great majority of M.D.'s are engaged in general practice, and they care for the majority of individuals who seek medical advice. While a section on General Practice in the American Medical Association was established at the San Francisco meeting in 1845, no nation-wide organization of general practitioners had made much progress until the American Academy of General Practice was founded June 10, 1947, by the officers and members of the Section on General Practice of the AMA on the occasion of the AMA meeting at Atlantic City. Although members of the new Academy must be members of the AMA., the organization is independent and distinct. The Academy, however, asserts its intention to support the AMA in every way.

The following quotation from the Constitution will clearly show the purposes for which the Academy was founded:

1. "To promote and maintain high standards of the general practice of medicine and surgery.
2. To encourage and assist young men and women in preparing, qualifying, and establishing themselves in general practice.
3. To protect the right of the General Practitioner to engage in medical and surgical procedures for which he is qualified by training and experience.

4. To assist in providing postgraduate study courses for General Practitioners, and to encourage and assist practicing physicians and surgeons in participating in such training.

5. To advance medical science and private and public health."

Qualifications for membership in the Academy include a state license to practice. Actual participation in general practice for at least three years, high moral and professional character, a year's rotating internship in an approved hospital or the equivalent in postgraduate training. That membership shall mean more than simply joining the organization, members will be required to devote at least 150 hours during every three-year period to postgraduate study—credit to be given for attendance at various medical meetings. Provision is made in the By-Laws for the establishment of state and county branches. An initiation fee of $10.00 and yearly dues of $15.00 are stipulated. An application for membership form may be obtained from Dr. Stanley R. Truman, Secretary, 1904 Franklin Street, Oakland 12, California.

The American Academy of General Practice is said to be growing rapidly in membership. The purpose of bettering general practice, for which the Academy was founded, is beyond reproach. If the Academy can stimulate the establishment of more postgraduate centers for general practitioners, with resulting greater attendance at county, state, sectional and national meetings, its existence will be justified. If not, it will have no *raison d'être* and will eventually fall into a state of innocuous desuetude.

MINNESOTA HEART ASSOCIATION PROGRAM

WITH diseases of the heart and circulation generally conceded to be the most important unsolved problem of medicine, it is intended that a major part of the program of the Minnesota Heart Association will be designed to provide supplemental educational aids for the medical profession.

It is intended that those aids should be provided through publications, pamphlets and the services of a Speakers Bureau, personnel of the Bureau to be available upon request of any county medical society for informal discussion of the problems of cardiovascular disease and emphasizing a progressive, objective approach toward reduction or possible elimination of those problems.

It is also intended in the program of the Minnesota Heart Association to stimulate research, both at the University of Minnesota and in smaller communities where facilities are available for clinical research along lines of clinical evaluation of advances in knowledge in cardiovascular disease.

To initiate and carry out the program of the Minnesota Heart Association, certain inevitable expenses are involved. They include costs of office space and equipment, clerical help, printed material, postage and other incidental charges, especially during the critical 1948 organizational period.

Meanwhile, the participation of Minnesota physicians as members of the Minnesota Heart Association can well mean the successful operation of the program. As members, physicians of Minnesota will also be adding their interest and voice to the development of the Association.

The eleven Minnesota physicians and five laymen who constitute the Board of Directors of the Minnesota Heart Association as it now exists (operating from the 20th Floor, Medical Arts Building, Minneapolis 2) are hopeful that other physicians in the state will promptly aid the program through their participation as members, since medical practitioners in general would stand to benefit by development of a program aimed at supplemental medical education in cardiovascular disease.

As Dr. L. A. Buie announced in his President's Letter in the October, 1947, issue of MINNESOTA MEDICINE, the Council of the Minnesota State Medical Association has approved the organization of the Minnesota Heart Association.

PAUL F. DWAN, M.D.
President, Minnesota Heart Association

GERMAN MEDICINE

AN account of what appears to be a very reliable investigation of medical research and training in Germany under the Nazi regime, including the war period, has appeared recently.* The question has arisen in our mind as to what, if any, valuable scientific facts were learned as a result of the sadistic experiments carried out on the thousands of helpless individuals in Germany under the Nazi regime in the name of science. This article answers the question.

It seems that the Technical Intelligence Di-

*Roueche, Berton, Zweckwissenschaft. The New Yorker, August 9, 1947

vision of the U. S. Department of Commerce sent a representative to Germany following the war to ascertain what developments in science, including medicine, the Germans had made during the war. They chose Hans Lowenbach, associate professor of neuropsychiatry at Duke University in Durham, North Carolina, as their investigator. He is a native of Dusseldorf, received his medical training in Germany, and was doing research in the Kaiser Wilhelm Institute in Berlin, when on June 3, 1934, Hitler's blood purge took place. Having some Jewish blood in his veins, he escaped after considerable difficulty to Norway, spent several months in Norway, and then served for three years as a ship doctor on a Norwegian whaler. With the help of friends at Johns Hopkins, he came to Baltimore in 1938 on the German quota from South Africa and obtained a job in research at Johns Hopkins. In 1940 he joined the faculty at Duke University.

Dr. Lowenbach made an exhaustive investigation of the scientific research which had been going on in Germany during the war. He reports that medical research during this period had been restricted by order to only those matters which might have a practical application—Zweckwissenschaft, so called. Research for research's sake was entirely abandoned. He lists eleven papers published during this period, all of which were of only passing interest. These included one in an artificial hand; a new method of steriling agar-agar; a survey suggesting that stocky individuals stand a hot, dry climate best; and analysis of structural abnormalities found in the brains of persons suffering from congenital mental disorders. Compared with the developments attained in our country during this period, such as penicillin, sulfadiazine, blood plasma, the Rh factor, et cetera, they seem insignificant. The results of the barbarous experiments on human beings have been absolutely nil and merely provided a sadistic delight to those who perpetrated the atrocities.

Dr. Lowenbach reports that the medical training under the Nazi regime has been of poor quality. All that is left of German medicine is a handful of old men. The younger men are provincial in their medical knowledge and complacent in their idea that the brilliant period in German medicine has not come to an end. His description of a brain operation performed in Munich at which he was a spectator, the diagnosis wrong and no provision being made in advance for a blood transfusion, suggests the type of surgery being practiced in Germany today.

To German scientists goes the credit of the first experimental work with sulfanilamide in December, 1932. It had first been synthesized in 1908. The first report of its clinical use was made by Domagk in an article in the Deutsche Medizinische Wochenschrift of February 15, 1935. This was before the Nazis took over in Germany. The development of the other sulfa drugs was accomplished outside of Germany, notably in England and America.

DIRTY LINEN AIRED

RECENTLY two articles appeared in *The Reader's Digest,* calling attention to certain reprehensible practices which are taking place in medical practice. None of those mentioned is new, and the profession has voiced its disapproval of such practices for years. How extensive they are and how many members of the profession are involved, we are unable to say.

The splitting of fees has always been frowned upon by the medical profession. Such a practice might well involve bidding for patients by the specialist, with higher fees charged by the specialist, and is bound to influence the referring physician in his choice of consultant. While the practice doubtless exists, we question whether it is widespread.

According to *The Reader's Digest,* the practice of rebating part of the cost of eyeglasses to the oculist by the optician is widespread, and the manufacture of lenses is in the nature of a monopoly. If so, the medical profession should take active steps to put an end to what amounts to fleecing the public by certain members of the profession.

As to the accusation that too many needless operations are performed, this cannot be denied. The figure of 9,000,000 a year is undoubtedly a gross exaggeration. There are many borderline cases where there is room for an honest difference of opinion. This applies particularly to the tonsil and appendix operations, which lead the list. It is the operations performed for revenue only that should be heartily condemned, and each hospital must be the guardian of the public by preventing such crooked procedure.

It is not pleasant to have our dirty linen aired. The way to prevent such criticisms is to keep our linen clean.

Miscellaneous

THE CLINICAL PATHOLOGIST VERSUS THE STATE HEALTH LABORATORY

During the annual session of the Minnesota State Medical Association, held at Duluth in July, 1947, the House of Delegates passed a resolution petitioning "the State Board of Health to include in its laboratory service Rh typing in order to make this service readily available to all practicing physicians."

This action was taken apparently without having given due consideration either to the fundamental merit of the proposition, or to the sentiments of the practicing clinical pathologists who hold membership in the Association.

The clinical pathologist objects to the resolution on the following grounds:

(1) The clinical pathologist, a fellow practitioner and member of the Association, who is materially affected by this resolution, had not been consulted before it was acted upon. The Rh determination is admittedly a laboratory procedure, and as such, it belongs in the sphere of the practice of clinical pathology.

(2) The Rh determination is not an emergency measure affecting public health, nor is it related to the control of communicable diseases. It can be carried out in the usual course of practice in any existing laboratory.

(3) The Rh determination by the state laboratory would invariably lead to blood grouping in general, as well as the Rh typing of male members of the population, since they are closely related in transfusion practice.

(4) The newly married or pregnant women may have their Rh determined at any time, not by the state laboratory as a public health or emergency measure, but by a private laboratory purely as a routine procedure.

(5) The technique of Rh determination is as simple as that of blood grouping and cross matching, since potent and reliable anti-Rh sera are now plentiful. The difficulty encountered in the past which probably prompted the resolution, was due mainly to the scarcity of reliable anti-Rh sera. This situation no longer exists, and all technicians who are trained to do blood grouping can perform the Rh test with equal skill and accuracy. The only caution suggested, here, would be that facilities for consultation should be made readily available in doubtful or important cases.

(6) The clinical pathologist claims that, since the Rh determination is within the sphere of his specialty, he may rightly expect a revenue from the performance of these tests for the practitioners. To deny him this right by the official action of his fellow practitioners would seem uncalled for, since there are a number of clinical laboratories throughout the state, directed or advised by a qualified clinical pathologist,† which are equipped to render not only the simple Rh determination but the more complicated serological procedures which may be required in the diagnosis and treatment of cases suffering from Rh incompatibility. It should be emphasized here that the clinical pathologist is fully cognizant of his obligations to the indigent and would gladly offer his services to him without cost whenever requested to do so.

Discussion

The clinical pathologist is a practitioner of medicine in the same sense as any of the members of other specialists. He is entitled to the support and protection of organized medicine. His future destiny may affect the destinies of all other members of the medical profession.

Unfortunately for the professional and economic security of the clinical pathologist, the diagnostic services of the state laboratory in infectious and communicable diseases in recent years has developed to such an extent that the medical profession looks to it more and more for aid in laboratory diagnosis, not only because of the excellent service it renders, but because of the elimination of the expense which it otherwise entails. The practice is now so universally appreciated, there is a tendency on the part of the practicing physicians not only to take full advantage of the present facilities of the state laboratory, but to advocate the extention of its services to include all diagnostic tests in order to "cushion" the cost of such services to the patient, ignoring completely the place which the clinical pathologist occupies in the practice of medicine. Coupled with this unfortunate trend is a more fundamental, yet less appreciated, fact that the field of clinical pathology and laboratory medicines, by its very nature, conveniently furnishes a fertile soil for the propagation of the seed of state controlled medicine, and that, combined with the public health aspects of the medical practice in general, the state laboratory may become the spearhead of socialized medicine, which may eventually affect not only the practice of clinical pathology, but that of radiology, pediatrics, obstetrics, or any other specialty.

This situation which threatens the very existence of the clinical pathologist as a medical specialist, and which, indeed, denies the principle of free private enterprise to a group of practitioners, is probably an important factor in the present scarcity of clinical pathologists. Young graduates are hesitant and cannot easily be persuaded to specialize in clinical pathology, since they realize full well the future of the specialty seems uncertain and uninviting.

This means that the smaller hospitals and communities will continue to be deprived of adequate clinical laboratory service except through the facilities of re-

This article was prepared at the suggestion of the Council, to enlighten the position the clinical pathologist takes on the diagnostic laboratory services rendered by the State Board of Health Laboratory, with special reference to the Rh determination. The opinions expressed, however, are the author's own.

†A list of practicing clinical pathologists in the state will be furnished upon request.

mote metropolitan laboratories, or through the services of the state laboratory.

In order to remedy this unsatisfactory situation, and to obtain adequate and on the spot laboratory service for rural hospitals and practitioners, and in order to uphold the principle of private enterprise for all, the clinical pathologist would propose to interest young medical graduates to enter into the specialty by assuring them of a productive field from which they may derive an attractive and satisfying practice, without the fear of "competition" from the state laboratory. To that end, he would suggest the establishment of a number of local community health centers in various parts of the state, each including a well-equipped hospital with adequate laboratory service under the direction of a trained clinical pathologist, who should be afforded an opportunity to personally serve local physicians and who, for economic reasons, may supervise several neighboring laboratories within the radius of 25 or 50 miles. This should give adequate, individualized laboratory service to all sections of the state. Moreover, he should be encouraged to avail himself of the facilities of the Department of Pathology of our Medical School for consultation, and to act as advisor and supervisor of an educational program for the local physicians whom he serves.

If this proposal were carried out, it should become unnecessary for the state laboratory to perform such diagnostic procedures as the Rh determination, tumor diagnosis, and the like, which certain public health officials and socially minded physicians are advocating, and might mean a definite deterrent to a threat of socialized medicine. It should stimulate initiative and incentive in the clinical pathologist, to fully equip his laboratory to render such diagnostic services as the state laboratory might otherwise render.

The clinical pathologist recognizes the leadership and the ability of the Minnesota State Board of Health Laboratory in research and diagnosis, by reason of the high qualifications of its scientific personnel and the economic advantages it enjoys. He looks upon it as a consultant and final authority in public health laboratory diagnosis. He recognizes the peculiarly desirable place it commands in promoting research and publicity relating to diseases which are of utmost public concern. He appreciates a healthy influence it exerts upon the practice of medicine in general and clinical pathology in particular. Such undertakings as the serologic evaluation program for participating laboratories currently being carried out, the statistical cancer survey service now being inaugurated, and other practical investigations dealing primarily with public health, are welcome contributions which the state laboratory can make without actually entering into the practice of medicine.

The clinical pathologist feels that where public health is not of immediate concern, clinical laboratory services should be left in his hands, and that he should not be placed in the role of a competitor in the practice of his specialty against the state operated laboratory. To burden the state laboratory with diagnostic tasks which primarily belong to the clinical pathologist might seem wise and expedient to some physicians, and a welcome sign to the advocates of socialized medicine. It would be accomplished, however, only at the sacrifice of a principle on which American medicine rests, and from which there should be no retreat.

KANO IKEDA, M.D.

MINNESOTA ACT RELATING TO LICENSED PRACTICAL NURSES

The law defines the practice of nursing by a licensed practical nurse as "the performing for compensation or personal profit, services required in the nursing care of the sick, not involving the specialized education, knowledge, and skill required in professional nursing." The law states in part: "It shall be a misdemeanor for any person to practice nursing as a licensed practical nurse in this state unless such person shall have first obtained a license from the Board, but this act shall not prohibit any person from nursing the sick for hire, who does not in any way assume or represent to be a 'licensed practical nurse.'"

The following is general information regarding the minimum qualifications for applicants for State Board examination and licensure as licensed practical nurses:

1. *Age.*—Applicant must be eighteen years of age or over.

2. *Character.*—Applicant must be of good moral character.

3. *Personal Fitness.*—Applicant must have a pleasing personality, give attention to own personal hygiene, show a sympathetic understanding of patients' problems, and have an appreciation of her own limitations, but possession of sufficient self-reliance to inspire confidence in the family.

4. *Health.*—Applicant must be in good physical and mental health.

5. *Education.*—Applicant must have completed at least an eighth grade education or its equivalent as determined by the State Department of Education.

6. *Practical Nurse training.*—Applicants might qualify for examination for licensure if they have had practical nurse training or the equivalent as indicated in one of the several groups below:

(1) Completion of and graduation from a program for the training of practical nurses which has been accredited by the Minnesota State Board of Examiners of Nurses; such a program to be not less than nine months in length.

Equivalents Effective for the Year 1948

(2) Completion of a systematized course of instruction and supervised experience in the care of the sick, of at least nine months' length; course not accredited by the Minnesota State Board of Examiners of Nurses; such a program to be evaluated by this board.

(3) Former student in an accredited school of basic

(Continued on Page 86)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

BARUCH PROPOSES PLAN FOR HEALTH INSURANCE

Speaking before a meeting in New York recently, Mr. Bernard M. Baruch, wartime economic stabilization director, presented his own theories about what this country needs in the way of health insurance. He proposed a health program to assist the medically indigent and hinted that government should be allowed its "legitimate part" in medicine.

Speaking before 600 doctors and hospital administrators at a dinner celebrating the progress of the Blue Cross plan in New York, Mr. Baruch detailed a program for improving medical and hospital services and advocated a form of health insurance for low income groups who are unable to pay for voluntary insurance such as the Blue Cross plan offers.

Mr. Baruch's proposals included the establishment of a new Cabinet post to handle health and human welfare problems. In his argument he cited American Medical Association estimates in 1939 that two-thirds of the nation's population could not afford the cost of serious illness.

Condemns Medical "Rear Guard Action"

Too long, Mr. Baruch declared, doctors have been "fighting a rear guard action." He was expressing dissatisfaction with the medical profession's program to provide adequate medical care. Several eastern newspapers played up Mr. Baruch's remarks and some of them suggested that the medical profession needs further stimulation in its efforts to avoid socialization. Mr. Baruch (who is the son of a physician) implied that the voluntary medical service plans now operating are too costly for the low income groups. For them he boldly endorsed some form of compulsory health insurance, financed through payroll deductions, with some government aid and with the patient retaining the right to choose his own doctor.

On the surface, Mr. Baruch's plan may appear harmless, but a second glance reveals the possibility of serious consequences. The payroll deductions would be very small, true, but they would be supplemented by employer and government so as to total a figure much higher than that which medical costs ever would reach under the voluntary system. The high cost of administering the program would absorb a greater share of the funds collected and only a relatively small amount would remain to pay for medical services rendered.

Then, too, it is known that payroll deductions will mean even less take-home pay than ever for the lower income groups. That will surely stimulate organized labor to demand further wage increases and will up production costs and the price of goods to the consumer. Thus begins a vicious circle which will widen continually until costs are all out of proportion to the original deductions taken out for the prepay program.

The Voluntary Way Is Cheaper

Figures bear out the contention of the medical profession that the voluntary method of enrolling subscribers in plans for budgeting the cost of medical and hospital care is much cheaper than compulsory government-administered plans.

The sincere effort that organized medicine has made to promote and extend prepayment medical care plans can be cited as positive proof that medicine is not on the defensive, nor is it "fighting a rear-guard action."

To those who complain that the rising cost of medical care is putting good health out of reach of the majority of our people, medicine has this to say: Medical care is expensive and is becoming more expensive; yet, in comparison to the national income, it is a shrinking item.

An analysis of the cost of medical care has been made by the American Medical Association Bureau of Medical Economic Research, which

presents facts and figures to prove that statement. It further points out that patients nowadays are getting far more for their money in terms of longer life than they ever got before.

Trend Is Toward Compulsion

Mr. Baruch's proposals are only one example of the tendency of many of today's deep thinkers to arrive at the conclusion that compulsion is the answer to our social problems. Mr. Baruch explains that "all law imposes compulsion." With that as a base line he then cites government's part in education and housing and suggests that government should also handle medicine in a like manner. With all of that he still maintains that he is opposed to socialization since "it leads ultimately to the police state, degradation of the individual and lessened well being." Right there Mr. Baruch has refuted his own argument, but medicine has an even better, more concrete answer.

In reality, just because people are compelled to set aside so much for medical emergencies, it doesn't necessarily follow that they will be in any better position to do so. If two per cent of a worker's income will supply him with complete hospital and medical service for himself and his family, and he is unable to give up such a small amount out of each pay check voluntarily—will he be more able to pay under a compulsory system?

Those unable to pay their own hospital and medical bills are today able to secure services free. Physicians generally supply care where it is needed and charge moderately when the patient has modest means—and not at all when the patient is in financial straits.

"What of the Little Fellow?"

Mr. Baruch insists that none of the prepay plans so far advanced—other than the so-called "compulsory health insurance"—provide for the low-income group. Some can afford voluntary health insurance, Mr. Baruch says; but, he asks, "What of the little fellow?" Mr. Baruch might well consider that that "little fellow" (who makes up about two-thirds of our population) affords the government a tremendous source of revenue. Furthermore, persons who live within their means, as all people should, will be able to provide ordinary medical care for themselves.

Mr. Baruch proposes to protect the little fellow with a strong, centralized, paternalistic government health program. Does he not realize that health programs are best administered locally as dictated by the needs of the individual community? Can he not foresee the possibility of such a system working ill to that very man he is proposing to help—the little fellow?

EXPERIMENT IN GOVERNMENT CONTROL OF MEDICINE FAILS

A couple of months ago, when an order came to cut down on services to subscribers in order to stretch a shrinking budget, San Francisco doctors gave up trying to support the Health Service System of that city, which had been in operation about ten years.

The doctors began resigning *en masse,* refusing to deviate from good medical practice. Said the physicians (both members of the San Francisco Medical Society and nonmembers alike): "We can take cuts in our fees, but we won't cut the quality of medical care!"

The Health Service System of San Francisco was created by the voters in 1937. The plan made it compulsory for the city's 12,000 employes to enroll in the plan; their dependents could elect to participate, or not, as they desired. Payroll deductions covered the premiums, and average monthly payments were around $3.40.

Plan Financially Unbalanced

The plan's financial base was extremely shaky and countless times the San Francisco County Medical Society warned of impending disaster and suggested reforms. In fact, the plan lost $37,578 last year despite its earned income of $529,330. In an attempt to regain its bearings, the Health Service System increased its premium rate 25 per cent. That had to be done even though physicians were only being paid 85 cents on a dollar.

The final attempt to keep the plan going was the plea to participating physicians from the medical director of the Health Service System: "Reduce your services!"

Physicians can surely make diagnoses without so many laboratory tests and x-rays, the medical director of the plan declared in his statement to the doctors. He reported that the results of several hundred examinations, particularly reports from x-ray laboratories, had been surveyed and

the conclusion had been drawn that from 50 to 60 per cent of these tests were unnecessary.

The medical society answered by pointing out the folly of taking chances on improper diagnoses just to cut operating costs. It further showed that x-ray and clinical tests amounted to a total of $33,944 during the year—hardly enough to account for a deficit of more than $37,000.

Thus has ended another "shining example" of government medicine.

AMA INTERIM SESSION AIMED AT GENERAL PRACTITIONER

The annual interim session of the American Medical Association in Cleveland, January 5 to 8, promises to provide unusual opportunities for postgraduate education and for discussing problems which beset the general practitioner.

Meetings to be held include the AMA House of Delegates, the Council on Industrial Health, the National Conference for County Medical Society officers and a special Midwest Regional Conference of the Council on Medical Service.

The AMA delegates meet the first two days, January 5 and 6 to transact Association business. At the same time Industrial physicians and others concerned with industrial health will convene for their Eighth Annual Congress. General practitioners supply a large part of the medical services which workers receive through industry and they are being invited to attend the sessions. The program has been constructed with the general practitioner in mind and will include discussions of first aid in emergency services in industry, physical examinations, administrative practices, applied physiology, aviation medicine, radiation medicine and practical expositions of occupational disease management, traumatic surgery and rehabilitation.

"Grass-Roots" Conference Meets

A second of the highly successful "Grass-Roots" Conferences of County Medical Society officers will be held on Tuesday evening, January 6. It will be devoted primarily to the problems of general practitioners—how to create more of them, how to uphold their prestige and their role as leaders in the community.

The AMA scientific program, to be presented beginning Wednesday morning and continuing two days, will be devoted to subjects of current interest and again slanted toward the doctors in general medicine. Each session is to be supplemented by panel discussions where doctors will have full opportunity to present individual questions they may have.

Four speakers on the program are from Minnesota: E. H. Rynearson and Albert Snell, Rochester, and C. D. Creevy and L. G. Rigler, Minneapolis.

On Wednesday the newly created AMA gold medal award to the outstanding general practitioner of the country will be presented. The AMA reports that hundreds of nominations have been received from state medical associations and various community and civic organizations. Biographies of the three top candidates selected by the executive committee of the Section on General Practice and the Board of Trustees will be submitted to the House of Delegates, which will choose the recipient on Monday morning.

Midwest Regional Conference

On Sunday, January 4, the day prior to the opening of the AMA interim session, the Council on Medical Service will hold a Regional Conference, with representatives from the six states of Illinois, Indiana, Kentucky, Michigan, Ohio and West Virginia. The AMA has announced that these regional conferences have been highly successful and is planning to hold them from time to time.

Another AMA-sponsored conference is coming up in February which is being watched with interest because of the vital problem with which it deals. This year marks the third of the series which is coming to be an annual event. This conference is the Conference on Rural Health to be held February 6 and 7 in Chicago.

Farmers and doctors are establishing by means of this conference a working liaison and the exchange of ideas and opinions at these conferences show promise of accomplishing a great deal in the rural health problem in the near future.

COUNTY OFFICERS MEETING

Officers of the component medical societies of the Minnesota State Medical Association will convene for their annual meeting at Hotel Lowry in Saint Paul on Saturday, February 28. Among the important topics to be considered will be an up-to-date progress report on the Minnesota Hospital Survey and Construction program, in which physicians in the state are vitally interested.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building

Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Saint Paul Woman Pleads Guilty to Forging Narcotic Prescriptions

Re United States of America vs. Frances C. Zink

On November 7, 1947, Frances C. Zink, forty years of age, who gave her address as the Lowry Hotel, Saint Paul, Minnesota, entered a plea of guilty in the United States District Court in Saint Paul, before the Honorable Robert C. Bell, to an information containing two counts of violations of the Federal Narcotic laws. Judge Bell suspended the imposition of sentence and placed the defendant on probation for five years on condition that she remain in the custody of the United States Marshal and be taken to the United States Public Health Service Hospital at Lexington, Kentucky, for treatment for drug addiction.

The defendant was arrested on October 18, 1947, by Saint Paul police officers after she attempted to have a forged narcotic prescription filled at a Saint Paul drug store. The druggist became suspicious because the defendant had sent a seventeen-year-old girl with the prescription. The investigation disclosed that the defendant had stolen prescription blanks from at least three Saint Paul physicians, and according to the Federal Bureau of Narcotics, had forged approximately twenty prescriptions calling for a total of 322 tablets of dilaudid in a period from September 8 to September 19, 1947.

The defendant, at the time of her arrest, was a buyer for the women's apparel department of a Saint Paul department store. Prior to coming to Saint Paul in June, 1947, the defendant had operated a dress shop at Madison, Wisconsin, for several years.

Saint Paul Woman Convicted of Shipping Misbranded Drugs in Interstate Commerce

Re United States of America vs. Carry Grace Colwell also known as Mrs. J. H. Colwell, trading as the Colwell Radium Company

On December 16, 1947, Mrs. Carry Grace Colwell, sixty-six years of age, 257 Johnson Parkway, Saint Paul, Minnesota, was sentenced by Judge Dennis F. Donovan of the United States District Court in Saint Paul, to pay fines totaling $500, following her conviction by a jury on December 1, 1947, of shipping misbranded drugs in interstate commerce.

An information was filed against Mrs. Colwell on July 23, 1947, charging her with four violations of the Federal Food, Drug and Cosmetic Act, and particularly with those sections forbidding the shipment of drugs in interstate commerce that are misbranded or mislabeled. At the trial the Government proved that the defendant shipped radium ore to a patient in Ohio. The representations that accommpanied the shipment stated that the product was efficacious in the treatment of such diseases as cancer, tumors, poliomyelitis, Bright's disease, liver disorders, heart trouble, gall-bladder trouble, diabetes, tuberculosis, locomotor ataxia, syphilis and other ailments of human beings. Another product, radium penetrating healing balm, shipped by the defendant to a patient in Montana, was represented as being efficacious in the treatment of similar diseases. The jury refused to believe the representations made by the defendant and promptly found her guilty.

The defendant, prior to her prosecution by the United States authorities, was warned by the Minnesota State Board of Medical Examiners to discontinue her activities. Mrs. Colwell holds no license to practice any form of healing under the laws of the State of Minnesota. Unless she ceases her activities, a request will be made by the Minnesota State Board of Medical Examiners that the matter be given the attention of the state authorities.

MINNESOTA ACT RELATING TO LICENSED PRACTICAL NURSES

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professional nursing, although not a graduate of such a school, and having had theory and clinical experience during that time; such theory and experience to be evaluated by this board; plus at least one year's experience as a practical nurse.

(4) At least two years' experience in the care of the sick, which might include experience in hospitals registered by the American Medical Association under the direct supervision of registered nurses or licensed physicians who have given personal instruction to the applicant; or in homes under the direction of licensed physicians or under the direction of public health nursing agencies.

(5) Completion of a prescribed course in the armed forces such as: U. S. Army, medical or surgical technician; U. S. Navy, Coast Guard, or Maritime Service, as hospital apprentice or pharmacist mate; plus one year's hospital experience in the armed forces.

In sections (3) and (4) above, unless some of such experience shall have been within the five years' period immediately preceding application, such applicant may be requested to obtain a "refresher" course or more recent experience before application will be accepted. Also in sections (3) and (4) above, such experience shall have been varied in nature to qualify as equivalent to completion of a program in an accredited school of practical nursing.

When request for application blank for examination is made, please indicate under which section above you qualify. Further information and/or application blanks for examination may be obtained from the Minnesota State Board of Examiners of Nurses, 222 Minnesota Building, Saint Paul 1, Minnesota. Credentials submitted in application will be reviewed and verifications obtained by this Board.

BOWEL OBSTRUCTION

(Continued from Page 57)

evaluation, experiences and background in judging them.

In these deaths which I have reviewed, most of them were due to peritonitis. There were twenty-five cases of peritonitis (61 per cent). There were five patients who died of cardiac disease. There were three cases which were difficult to evaluate but in which death was apparently due to metastatic carcinoma. There were two deaths which were attributable to shock. One patient was a diabetic, and death was attributed to that. There were two deaths due to peritonitis and pneumonia and three due to pneumonia.

Minnesota Academy of Medicine

Meeting of May 14, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 14, 1947. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 p.m. by the President, Dr. E. M. Hammes.

There were fifty members and four guests present.

Minutes of the April meeting were read and approved.

The scientific program followed.

THE SURGICAL ASPECTS OF JAUNDICE

WILLIAM H. RUCKER, M.D., F.A.C.S.
Minneapolis, Minnesota

Jaundice is frequently the symptom of a condition that can only be relieved by surgery. Its treatment is definitely medical or surgical, contingent upon its basic pathology. Though its etiology is often complex and diagnosis at times extremely difficult, precise differentiation is essential if the patient is to be relieved and not injured by injudicious therapy or operative procedure.

The importance of jaundice to the surgeon is stressed by such reports as those of Snell[12] and Meyer[9] who both found approximately 60 per cent of all icteric patients amenable to surgery. That inaccurate diagnosis and incorrect treatment may be dangerous is attested to by White[21] who states that operations in cases of deep jaundice due to hepatitis or acute yellow atrophy have a mortality rate approaching 100 per cent and in cirrhosis of the liver 35 per cent. We know that ill-advised cholecystectomies may be harmful to undiagnosed congenital hemolytic jaundice patients, some 60 per cent of whom have gallstones. It is also evident that unoperated prolonged biliary obstruction leads to permanent liver damage and cirrhosis.

The surgeon will certainly make fewer inaccurate diagnoses and obtain better results, if he has a clear understanding of jaundice, its etiology, and the important methods of its differentiation. This is only possible through a knowledge of the anatomy and functions of the liver and other organs and tissues involved in its production.

The liver consists of cords of polygonal cells enclosing the bile canuliculi and surrounded by Disse's lymph spaces. The sinusoids in contact with these spaces contain the reticulo-endothelial or Kupffer's cells. The liver has a unique vascular system, in that it has two afferent blood supplies, the portal vein and the hepatic artery, and but one efferent, the hepatic veins. The hepatic artery joins with the portal vein to supply the sinusoids, thus allowing a mixture of arterial blood with the venous blood from the spleen, stomach and intestines. The sinusoids empty radially into a central vein which joins with other central veins to form the hepatic vein which empties into the vena cava. The polygonal and Kupffer cells perform the many bio-chemical processes of the liver and are intimately involved in the production of jaundice.

JAUNDICE

I. **Intrahepatic**
- A. *Cellular*
- B. *Cholangiolar*
- C. *Mixed*
- A. *Infections*
- B. *Poisons*
- C. *Miscellaneous Diseases*
- D. *Malignancy*
  - (a) Primary
  - (b) Metastatic

II. **Extrahepatic**

A. *Obstructive*

1. Transient
   - (a) Inflammation
     - (1) Cholecystitis
     - (2) Pancreatitis
     - (3) Duodenal Ulcer
   - (b) Spasm of Common Duct or Sphincter
2. Intermittent
   - (a) Stone
   - (b) Polypoid Tumors—Benign or Malignant
     - (1) Ducts
     - (2) Papilla of Vater
     - (3) Duodenum
3. Persistent or Complete
   - (a) Malignancy
     - (1) Primary in the Ducts
     - (2) Secondary Invasion of Ducts
       - (a) Pancreas
       - (b) Liver
       - (c) Gall Bladder
       - (d) Duodenum
   - (b) Stricture
     - (1) Congenital
     - (2) Acquired
   - (c) Benign Tumors
     - (1) Ductal
     - (2) Extraductal

B. *Hemolytic*

1. Acute
   - (a) Poisons
     - (1) Animal
     - (2) Vegetable
     - (3) Chemical
     - (4) Bacterial Toxins
   - (b) Protozoal Parasites
   - (c) Miscellaneous Hemolysins
2. Chronic
   - (a) Specific Anemias
   - (b) Congenital and Acquired Hemolytic Jaundice
   - (c) Associated Chronic Disease and Malignancy

C. *Combined Hemolytic-Obstructive*

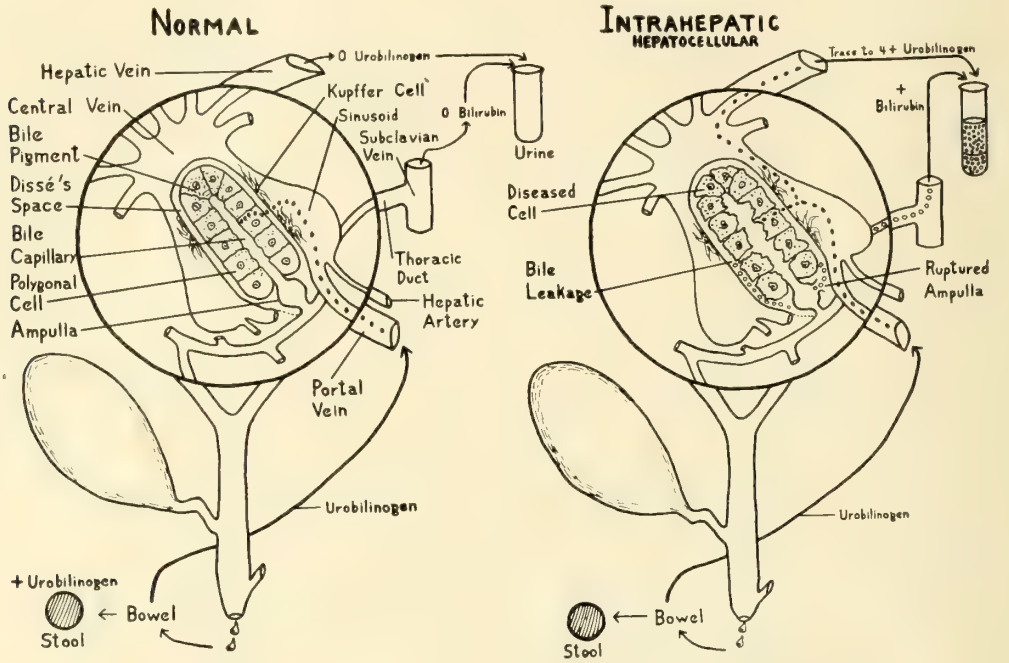
Jaundice is due to an excess of the bile pigment, bilirubin, in the blood stream. Bilirubin is formed from hemoglobin in the destruction of red blood cells by the reticulo-endothelial cells, particularly those of the liver, spleen and bone marrow. Normally this pigment passes from the Kupffer cells through the polygonal cells, where it probably loses its globin radical,[16] into the bile channels. In the bile it passes through the common duct into the duodenum to be changed, later in the colon, by anaërobic bacteria, to urobilinogen. About one-half of this urobilinogen is picked up by the portal system and returned to the liver where all but a trace again passes into the bile. In order to have an excess of bilirubin in the blood stream, some intra or extra hepatic disturbance must interfere with this normal chain of events.

If the liver cells become diseased and normal passage of pigment from sinusoid to bile capillary does not occur, the resultant jaundice is known as hepatocellular. When the bile ducts became obstructed and the bile is backed up, the hyperbilirubinemia that results is recognized as obstructive jaundice. In the event a hemolytic agent causes such a great destruction of red corpuscles that the liver cells are unable to pass all the bilirubin into the bile channels, and the excess is left in the blood stream, we have what is termed hemolytic jaundice. Frequently, combinations occur and are identified as mixed jaundice. In both the hepatogenous and the obstructive types, bile escapes into the lymph and blood streams; hence, they are also described as regurgitation jaundice. In the hemolytic form this does not occur, and it is classified as a retention jaundice.

While these classifications are important in understanding the pathogenosis of jaundice, the surgeon will be primarily interested in whether the patient's icterus arises from a condition within or without the liver. His services will usually be of little value if the disease is confined to the liver. Therefore, some such classification as the following will be more suitable to him.

Intrahepatic or hepatogenous jaundice may be due to diseased liver cells, obstruction of bile capillaries, or combinations of both. It may be caused by infections, poisons, and various diseases, or it may result from either primary or metastatic malignancy. In the former it may be mild, and the patient recover in a few weeks or months, or severe, and result in acute atrophy or cirrhosis. There will usually be a history of infection or exposure to a hepatoxin, no pain, an orange tinged icterus, an enlarged liver, clay-colored stools and a highly colored urine. In the advanced cases pigmentation of the skin, ascites and edema, spider naevi, pallor and mental disturbances may be present. Early in hepatitis the urine contains large amounts of urobilinogen. After jaundice appears this often drops to a small amount, to arise again as recovery takes place. Bilirubin is usually present.

The surgeon should keep in mind homologous serum jaundice because it closely simulates extrahepatic ob-



INTRAHEPATIC JAUNDICE

Types	*Causes*
1. Cellular	1. Infections
2. Obstructive	2. Poisons
3. Mixed	3. Miscellaneous Diseases
	4. Malignancy
	(a) Primary
	(b) Metastatic

Fig. 1. Normal condition and intrahepatic jaundice.

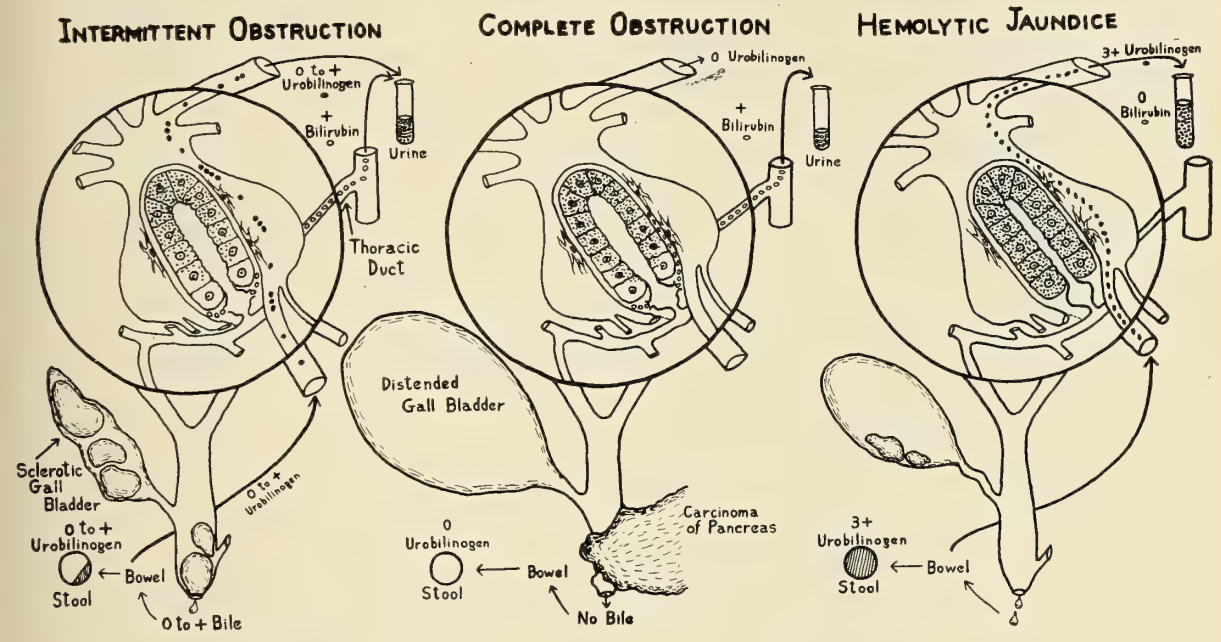
structive jaundice and may develop some sixty to ninety days following the injection of serum or plasma. Schiff[11] reports a case where plasma was used following the removal of a common duct stone and jaundice developed some two months later. Careful study established the diagnosis of serum jaundice and a hazardous operation for stricture or overlooked stone was avoided.

Metastatic carcinoma of the liver is probably twenty times as common as primary hepatic malignancy. Its source is usually the intestinal tract, the genitourinary organs, the breast or the lung, though it may arise from almost any tissue of the body. In both conditions weakness, loss of weight, anemia, pain, fever, edema, and ascites are common symptoms. Palpable tumors will be evident in the liver and the spleen is often enlarged. Enlarged nodes in the supraclavicular space, rectal shelf, or inguinal regions, masses in the intestinal tract or other evidences of malignancy may point to metastasis in the liver.

Operation will play the leading role in extrahepatic jaundice. It may be either obstructive, from a blockage of the large bile ducts, or hemolytic, from excessive hemolysis of the red blood cells. In the obstructive type bile may be transiently, intermittently, or persistently blocked. Cholecystitis is the common cause of transient jaundice but occasionally pancreatitis or duodenal ulcer may be the instigator. Spasm of the common duct or sphincter of Oddi may rarely cause a mild transient jaundice. Intermittent obstructive jaundice is usually caused by a common-duct stone, though at times a benign or malignant polypoid tumor of the duct, papilla of Vater, or duodenum has been found to be the source. Persistent exclusion of bile is usually indicative of malignancy or stricture. However, benign ductal or extraductal tumors may very occasionally prove the cause.

Carcinoma may attack the common or hepatic ducts or they may be secondarily invaded from malignancy in the pancreas, liver, gall bladder, or duodenum. Congenital atresia of the bile ducts may occur and demand operation, yet one is more frequently confronted with those strictures that occur post-operatively due to trauma or section of the common duct. Inflammation may be the cause of a benign fibrous tumor of the duct or eroding gall-bladder stones may be the source of a granuloma which causes complete obstruction of the choledochus.

Transient jaundice is rarely important or difficult to diagnose. In the intermittent type a previous history of gall-bladder stones, when considered with the relative rarity of the occurrence of polypoid tumors, will usually point to choledocholithiasis. Persistent exclusion of bile is most often encountered with either malignancy or stricture, and only very occasionally with benign



INTERMITTENT OBSTRUCTION
1. Stone
2. Polypoid Tumors Benign or Malignant
   (a) Ducts
   (b) Papilla of Vater
   (c) Duodenum

COMPLETE OBSTRUCTION
1. Malignancy
   (a) Primary in the Ducts
   (b) Secondary Invasion of Ducts
2. Stricture, Pancrease, Liver, Gall Bladder, Duodenum
   (a) Congenital
   (b) Acquired
3. Benign Tumors
   (a) Ductal
   (b) Extraductal

HEMOLYTIC JAUNDICE
1. Acute
   (a) Poisons
   (b) Protozoal Parasites
   (c) Miscellaneous Hemolysins
2. Chronic
   (a) Specific Anemias
   (b) Congenital and Acquired Hemolytic jaundice
   (c) Associated Chronic Diseases and Malignancy

Fig. 2. Extrahepatic jaundice.

tumors. Congenital stricture should raise no problem and the history of previous operation should point to the diagnosis in the acquired type. In the great majority of cases of extrahepatic obstructive jaundice, then, differential diagnosis must be made between intermittent and complete blockage; stone on the one hand and malignancy on the other.

In the intermittent type certain rather definite findings are evident. Usually one is confronted with a middle-aged woman having a history of previous attacks of gallstone colic, stones perhaps confirmed by x-ray, her present illness being initiated by chills, fever, and colic followed by jaundice, clay-colored stools, and bile-tinged urine. Because of the intermittency of the blockage, the color of the urine and the stool, as well as certain laboratory tests, will vary. Urobilinogen will appear in the urine and stools in varying quantities from day to day, depending upon the degree of obstruction. Bilirubin will be present in the urine because bile is regurgitated into the lymph and blood streams. The liver will usually be tender and enlarged, and the gall bladder not palpable, but sclerotic and containing stones. The jaundice will often have a greenish tint and pruritus will frequently be present.

The complete obstruction of malignancy will usually occur in older males and loss of weight and weakness will be marked symptoms. Other findings will be compatible with the persistent blockage of bile; jaundice of a deep hue, pruritus, consistently acholic stools and a markedly dark urine. There will be an absence of urobiliogen in the stool and urine as no bile will reach the intestinal tract. Regurgitation of bile, however, will cause the urine to show a positive reaction for bilirubin. Pain will depend upon the location of the lesion. If the malignancy is primary in the ducts, chills, fever and colic will be evident. This is also true if the gall bladder is the primary site. When the head of the pancreas is involved, usually a dull, persistent, boring pain will be present in the right epigastrium. However, if the primary site is in the body of the pancreas, pain will be referred to the lower dorsal and lumbar regions. A dull aching pain in the right hypochondrium is complained of in carcinoma of the liver. Epigastric distress, nausea and vomiting will be symptoms in malignancy of the stomach or duodenum. On physical examination there will be a deep greenish jaundice, probably evidence of scratching and petechiae, and usually an enlarged liver and distended gall bladder. Masses and nodes may be palpable.

Hemolytic jaundice probably results, as Rich[10] states, not only from an overhemolysis of red blood cells and resultant excess of bilirubin, but also through inefficient anemic liver cells being unable to perform their normal functions. In the acute form the hemolytic agent may be an animal, vegetable, or drug poison, bacterial toxin, protozoal parasite, mismatched transfusion or other miscellaneous known or unknown hemolytic substances. In the chronic form such diseases as sickle cell anemia, Mediterranean anemia, congenital and acquired hemolytic jaundice, et cetera, occur. Also, it may be present with such chronic disorders as carcinomatosis, Hodgkin's disease, pernicious anemia and leukemia. Hemolytic jaundice is of interest to the surgeon not only because it may occur in extensive burns, mismatched transfusions and chronic and malignant diseases but principally because he can bring relief by splenectomy to those patients with congenital and acquired hemolytic jaundice.

Congenital hemolytic jaundice is hereditary and follows Mendel's law. The most generally accepted theory is that the offending hemolysin is developed in the spleen. It is a type of jaundice characterized by splenomegaly and a typical blood picture of microcytosis, spherocytosis, reticulocytosis and increased fragility of the red blood cells. The disease has active and inactive stages. The symptoms are those of anemia, i.e., weakness, dizziness, et cetera. The jaundice is a typical lemon to golden yellow and there is no pruritus. The family history, the appearance and symptoms of the patient and especially the specific blood picture and the indirect Van den Bergh reaction should make certain the diagnosis. It should seldom be confused with other forms of jaundice.

In chronic hemolytic jaundice there is such a great concentration of bile that in the majority of cases pigment stones are formed. These stones may occur in the gall bladder or bile ducts and at times cause obstruction and therefore a combined hemolytic-obstructive jaundice.

Intrahepatic and all forms of acute and chronic hemolytic jaundice, with the exception of the congenital and acquired forms, should be treated by the internist and carefully avoided by the surgeon. In the operator's field will lie the extrahepatic obstructive type and these two spherocytic anemias. As we have stated, little trouble should be encountered in diagnosing the anemias. The problem lies in differentiating the hepatogenous from the obstructive, particularly in the late cases. Obstruction of bile in time results in liver cell damage, and, conversely, prolonged hepatic cell disease causes obstruction of the bile canuliculi. Hence, as time passes, the condition approaches one of mixed jaundice, and the primary etiology towards which treatment must be pointed is lost in the complexity of the situation. This fact stresses the importance of early study and the necessity of a thorough history and physical examination and discounts the value of late liver function tests.

Steigman, Popper and Meyer[14] reported that they were able to diagnose correctly 62 per cent of all icteric patients with a complete history, a careful physical examination and one urinalysis for bilirubin and urobilinogen, and increased this percentage to 79 per cent by plotting curves of the daily estimations of these two urinary tests. The liver function tests were helpful in 16 per cent, and 5 per cent were undiagnosable.

Though it is true that meticulous clinical evaluation of the icteric patient is the most important single factor in diagnosis, the surgeon must have a knowledge not only of the simpler essential laboratory procedures and also the better established liver function tests, but also of other available diagnostic methods. He will then be able to corroborate his clinical findings, receive assistance in differentiation, follow the progress of the disease, and evaluate the condition of the liver so that

the patient may be properly prepared for operation.

Of the extremely large number of tests, many are too complicated for the average hospital laboratory and some are indefinite and confusing. An attempt is therefore made in the following group to list only those tests and procedures that are clear, essential, and not too complicated.

Diagnostic Procedures

1. Complete Blood
2. Van den Bergh—quantitative
3. Urine Tests
   - (a) routine
   - (b) urobilinogen
   - (c) bilirubin
4. Stools—urobilinogen
5. Liver Function Tests
   - (a) Cephalin-Cholesterol Flocculation
   - (b) Thymol Turbidity
   - (c) Alkaline phosphatase
   - (d) Cholesterol and ester fraction
   - (e) Prothrombin Time
   - (f) Prothrombin Response Test
6. Duodenal Drainage
7. X-ray
8. Peritonescopy
9. Liver Biopsy.

A complete blood test, besides detecting evidence of anemia, infection, et cetera, may lead to the diagnosis of congenital hemolytic jaundice, leukemia, pernicious anemia, and other diseases.

The quantitative Van den Bergh procedure will not only give the amount of direct and indirect reacting bilirubin and differentiate regurgitation from retention jaundice, but also the total serum bilirubin. Repetition of the test will indicate the fluctuation of jaundice, thereby helping in differentiation and in determining the progress of the disease.

Routine urinalysis will determine the health of the kidney, which is of particular importance in liver damage and in the accuracy of liver function tests. The urobilinogen and bilirubin tests are simple and extremely helpful as the sketches have shown. They give much information in regard to the condition of the liver cell and bile capillary.

Examining the stool for urobilinogen tells one whether bile is entering the intestine.

Watson[15] states, "The thymol turbidity test is more uniformly negative in jaundice due to extrahepatic biliary obstruction, while the Hanger or cephalin cholesterol flocculation test is more likely to be positive in cases of parenchymal liver disease, especially cirrhosis. The thymol turbidity test is the simplest, quickest, and most reliable test, technically. If negative, however, it should be followed by the Hanger test."

Alkaline phosphatase is usually higher than 10 Bodasky units in obstructive, and less than 10 units in hepatocellular. Cholesterol is usually increased in obstructive and diminished in liver cell disease. The prothrombin test is particularly valuable to the surgeon. Prothrombin is manufactured by the liver cells. Its production is frequently decreased in both obstructive and hepatogenous jaundice and bleeding tendencies may therefore become evident. If vitamin K is given to the obstructive case, the prolonged prothrombin time will be decreased, while no relief will be obtained in the hepatic patient. This is called the prothrombin response test.

At the University of Minnesota, Watson[15] uses a chart upon which he plots the many liver function tests and thereby obtains a better over-all picture of liver function.

Examination of the duodenal contents may prove of value. Cholesterol crystals and pus will point to gallstones. Blood may indicate malignancy. Blockage at the Ampulla of Vater will diminish both bile and pancreatic enzymes, while obstruction of the common duct will interfere with the flow of bile but allow normal amounts of enzymes.

While the ordinary Graham-Cole x-ray of the gall bladder will usually be of little assistance, films of the gastrointestinal tract may show deformities or shadows of neoplasms responsible for blockage of the ducts.

Before operation is attempted in the difficult diagnostic case, peritoneoscopy and liver biopsy should be considered. In competent experienced hands these procedures have given much information and proved valuable in differentiating extrahepatic from intrahepatic jaundice.

In spite of the many methods of diagnosis now available, there will remain a number of cases in which diagnosis will be impossible. However, this percentage should remain small, if the clinician understands and uses intelligently the procedures now available to him. Perhaps the future will bring an x-ray technique capable of distinguishing these two forms of jaundice.

Summary

1. The surgical import of jaundice is stressed by the fact that more icteric patients are amenable to surgery than to medical therapy.

2. Whether treatment shall be medical or surgical is dependent upon accurate diagnosis, and an incorrect choice may prove harmful or even disastrous.

3. An understanding of the pathogenosis of jaundice is essential in differentiation.

4. A classification of jaundice is made from the viewpoint of the surgeon and some salient symptoms and findings of each type are discussed.

5. Though careful clinical study and simple laboratory procedures will diagnose the majority of icteric patients, nevertheless liver function tests and other procedures are necessary in the diagnosis of some 20 per cent.

6. It is evident that simpler, less confusing, and improved methods must be developed to differentiate intrahepatic from extrahepatic jaundice before all these patients can be properly diagnosed and correctly treated.

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Discussion

Dr. E. M. Jones, Saint Paul: I have enjoyed Dr. Rucker's paper very much. He has presented a subject that is of equal interest to the surgeon and the internist. The surgeon is called upon to treat individuals with extrahepatic obstruction, and the largest percentage of these obstructions are due to gallstones. As Dr. Rucker has pointed out, it is sometimes very difficult to state whether the obstruction is due to gallstones or a malignant process. I feel that, if it is at all possible, in cases with a diagnosis of malignancy causing the obstruction, an exploration should be carried out. Some years ago, I had occasion to review a large series of cases of disease of the gall bladder and the extra-biliary ducts at the Ancker Hospital. In this group two cases were found that had been diagnosed as having jaundice due to a malignant process. At autopsy the jaundice was found to be due to gallstones. Shortly afterwards another case presented a similar picture, and the same diagnosis was made. At exploration, a stone was found obstructing the common duct. The stone was removed, and the patient made a good recovery. If one such case is found in many hundreds of explorations, the exploration is well worth while. Sir Berkeley Moynihan once said that the most important person at an operation is the patient. That we are all cognizant of this is borne out by the great stress placed on preoperative care. There is no group of cases that requires more exact, painstaking preoperative care than the jaundiced patient. The results have been much better since this practice has been carried out.

Dr. Otto W. Yoerg, Minneapolis: Dr. Rucker has given us a very comprehensive résumé of jaundice. I know he has given much of his time to evaluating the essentials of so large a subject.

Dr. Rucker stressed the fact that diagnosis should be made early because as jaundice progresses laboratory findings become more inaccurate.

Early operation in surgical jaundice, as Dr. Rucker stated, is important as it is well known that delay in operation leads to liver damage which is often irreparable and which may account for incomplete relief from symptoms after operation.

Hemolytic jaundice is not common and is easily overlooked. A young man of thirty-four recently came under my care complaining of weakness and of being tired. He was moderately jaundiced, but was unaware of this except that he had known that he had always been of a rather yellow color. He stated that he had consulted a number of physicians, all of whom had told him that he had gallstones and suggested their removal. Examination of the abdomen was negative and the spleen was not palpable. X-rays disclosed a large gallstone. A complete blood examination made at one of our better hospitals disclosed a hemoglobin of 40 per cent and findings of a secondary anemia. He was given parenteral liver and kept under observation for three or four weeks without change in his jaundice. A tentative diagnosis of a possible hemolytic jaundice was made and he was referred to an internist for further study which confirmed the diagnosis. I removed a 2000-gram spleen followed by the disappearance of his jaundice and a full recovery. It is of interest that blood studies of the mother, three sisters and one brother disclosed fragility of the red cells, but all were symptom free. Gallstones are present, as Dr. Rucker stated, in 50 to 60 per cent of hemolytic types of jaundice. Enlarged spleens are not always palpable and it might be well to ray the left as well as the right upper abdomen which should disclose any enlargement of the spleen if present. Accurate blood studies are, of course, essential and should be done by a well-trained careful laboratory technician.

I have enjoyed hearing Dr. Rucker's thesis which he has so ably presented.

Dr. Rucker, in closing: I want to thank Drs. Jones and Yoerg for their kind remarks. And I wish to thank the Academy for the privilege of becoming a member.

AN ENLARGING CONCEPT OF THE PORPHYRINS IN CLINICAL MEDICINE

Inaugural Thesis

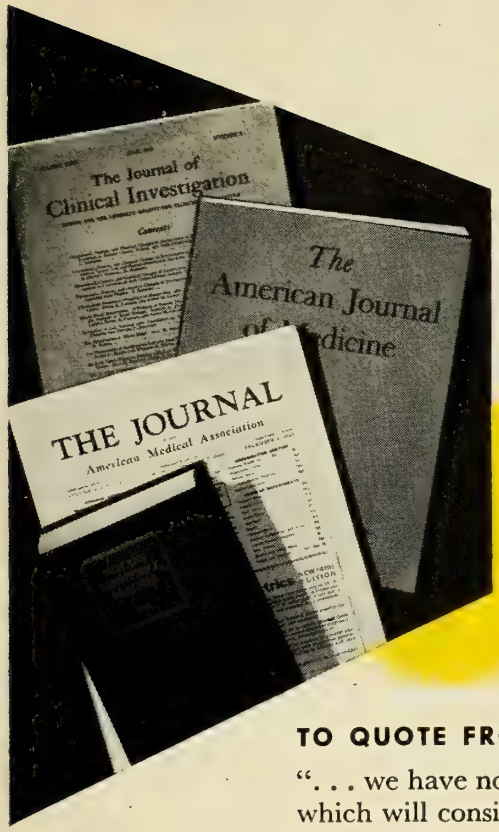
CECIL J. WATSON, M.D.
Minneapolis, Minnesota

Abstract

This study will include a brief discussion of the nature of the porphyrins of clinical and physiological significance: namely, protoporphyrin, the two coproporhyrin-isomers, and the uroporphyrins. The earlier confusion with hematoporphyrin and the means of distinction will be discussed. Reference will be made to simple quantitative methods for protoporphyrin, the total urinary coproporphyrin, as well as uroporphyrin and its precursor, porphobilinogen. Reference will also be made to a relatively simply method of analysis of the percentage of the coproporphyrin isomer A, which is applicable to as little as 100 c.c. of urine. This method of determining isomer distribution, depending upon differential precipitation in 30 per cent acetone in the cold, has permitted a study of coproporphyrin isomer excretion in various diseases which was not hitherto possible, because of the previous necessity of isolation of the crystalline esters from large volumes of urine, often as many as thirty or forty liters, with subsequent determination of the melting point of the crystals.

A discussion will then follow of the total coproporphyrin excretion in the 24-hour urine and the isomer distribution in various diseases under normal and pathological conditions, including: (1) hepatitis and

(Continued on Page 94)



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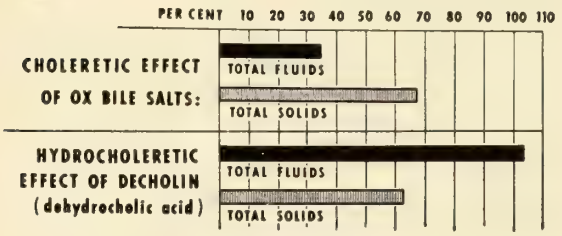
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(Continued from Page 92)

cirrhosis; (2) alcoholism; (3) anemias and blood dyscrasias; (4) affections of the nervous system with particular reference to poliomyelitis and other neurotropic virus diseases; and (5) idiopathic coproporphyrinuria with abdominal pain.

It will be emphasized that porphyria in which uroporphyrin is formed and excreted is an independent disease in which there is an inborn error of metabolism. Porphyria is thus to be sharply differentiated from the symptomatic coproporphyrinurias of various types as alluded to above. Two main forms of porphyria will be discussed briefly; namely, the intermittent acute form, and the congenital or light-sensitive form. While the latter is undoubtedly very rare, the former occurs much more frequently than has been realized. Its confusion with various other disease states will be mentioned. The clinical and laboratory manifestations in porphyria will be alluded to.

Discussion

DR. E. L. ALTHAUSEN, University of California Hospital, San Francisco (by invitation): I certainly cannot add anything constructive to this presentation. However, I was also very much interested in hearing this paper and can say that a very valuable field of investigation has been opened and a great deal of work has gone into the presentation given here tonight. I shall inquire into the possibility of starting something similar when I get home.

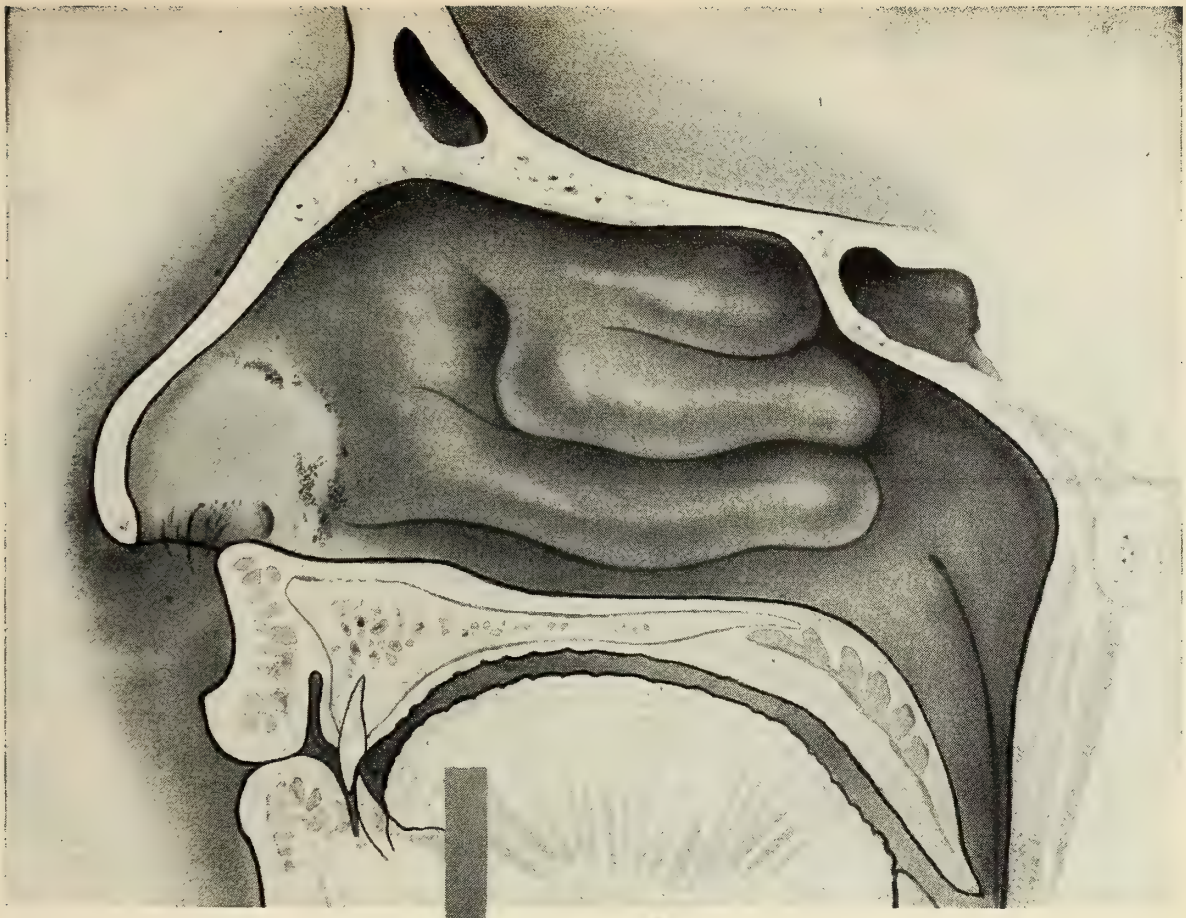
DR. E. SHORR, Cornell University, New York City (by invitation): I am very much in Dr. Althausen's position of not having had direct experience with porphyrin metabolism. I came to Minneapolis with the idea of interesting people in various types of liver diseases and shall return to New York with greater interest in proporphyrins. I leave Minneapolis with regret. Like Dr. Althausen, I shall attempt to learn Dr. Watson's technique and feel sure it is going to add zest to our liver problem studies.

DR. S. E. SWEITZER, Minneapolis: Dr. Watson mentioned insecticides. Did he find any sensitivity to the use of DDT powder in delousing? We use it quite a lot at the Minneapolis General Hospital, and so far have not seen any cases of sensitivity.

DR. WATSON, in closing: I am very grateful to those who were so kind as to discuss my contribution. In regard to insecticides, I don't know what to say about DDT but I have no evidence that it causes anemia. I think insecticide injury is a matter of sensitivity. I remember very well a case as remarkable as any I have ever seen. A young man from North Dakota first came to the University Hospital in 1928. He was found to have aplastic anemia. The history states that he had been working in a grocery store with insecticide powders. He was transfused a number of times and allowed to go home. He went back to North Dakota where for two or three years he did not return to his former kind of work. Then he did return to it, handling insecticide powders again, after which he had a very severe relapse of his aplastic anemia. We followed him for six years, giving many transfusions. He died of a gas bacillus sepsis. Perhaps if he had avoided the insecticide powder, he might have been able to recover completely.

The meeting adjourned.

A. E. CARDLE, M.D., *Secretary*



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In Memoriam

JOHN FREDOLPH ALDEN

Dr. John Alden was born in Sweden on January 8, 1888. The names of his parents are not known. He left Sweden at the age of fifteen, came to the United States and settled in southern Minnesota where he went to school.

After finishing high school, he attended Gustavus Adolphus College in St. Peter and later attended Loyola University in Chicago. In 1916 he graduated from the medical department of Marquette University, Milwaukee, Wisconsin. His internship was served at St. Joseph's Hospital, Saint Paul, in 1916 and 1917, and he entered general practice in 1917.

In 1921 Dr. Alden married Zena Furberg. They had three children—Dr. John Fredolph, Jr., Virginia May and Robert William.

He was a member of the Alpha Kappa Kappa Medical Fraternity, the Saint Paul Athletic Club and the Automobile Club.

Dr. Alden was active in the Osman Temple, the Inter-Professional Men's Institute, the Ramsey County Medical Society, and the American College of Physicians and Surgeons. He was a staff member of Bethesda, St. Joseph's and Children's Hospitals.

On August 10, 1947, at Lake Owasso, while swimming from the shore to a sail boat moored near by, death came by drowning.

Dr. Alden represented a fine type of general practitioner which is becoming altogether too rare. He will be missed by his many friends both in and out of the profession.

He was a member of Gloria Dei Lutheran Church. Interment was at Acacia Park Cemetery.

GEORGE ALFRED MORLEY

Dr. G. A. Morley of Crookston passed away November 19, 1947, following a heart attack. He was seventy-nine years of age.

Dr. Morley was born March 15, 1868, in Juneau County, Wisconsin. He received his M.D. degree at Rush Medical College in 1897. He specialized in eye, ear, nose and throat diseases, which he had practiced for many years.

Dr. Morley was a former president of the Crookston public school system. He was a member of the Red River Valley Medical Society, the Minnesota State and American Medical Associations.

PETER ERNEST KIERLAND

Dr. P. E. Kierland, a practitioner of Alexandria, Minnesota, for the past four years, died in Chicago on November 29, 1947, en route to Florida.

Dr. Kierland was born at Rushford, Minnesota, May 18, 1878. He attended the University of Minnesota graduating from Rush Medical College in 1902. He practiced at Aberdeen, Washington, from 1902 to 1904, at Mahnomen, Minnesota, from 1904 to 1912, at Harmony, Minnesota, from 1912 to 1922, and at Alexandria from 1922 until his death.

He was a member of the Park Region District and County Medical Society, the Minnesota State and American Medical Associations.

Dr. Kierland married Elsie M. Ochsner of Henning, Minnesota, July 21, 1905. He is survived by his widow and three children, Dr. Robert Kierland of Rochester, and two daughters.

SAMUEL ROBINSON

Dr. Samuel Robinson died on September 17, 1947, at Santa Barbara, California.

Samuel Robinson was born February 23, 1877, at Augusta, Maine. He received the degree of B.A. in 1898 and of M.D. in 1902 from Harvard University; was an intern at the Massachusetts General Hospital, Boston, from 1901 to 1903. From 1903 to 1912 he practiced at Boston and from 1912 to 1915 at Clifton Springs, New York.

He entered the Mayo Clinic, Rochester, Minnesota, as head of the Section on Thoracic Surgery in January, 1915. He was first assistant in general surgery from 1915 to 1916; also, he was assistant professor of surgery, The Mayo Foundation, from 1915 to 1917. He left the Mayo Clinic, October 26, 1917.

During World War I, Dr. Robinson was chief of the surgical service, with the rank of major, at the Letterman General Hospital, Presidio, San Francisco. In 1918 he went to Santa Barbara to practice surgery. He was chief of the surgical staff of the Santa Barbara General Hospital and was a member of the surgical staff of the Santa Barbara Cottage Hospital and of the St. Francis Hospital.

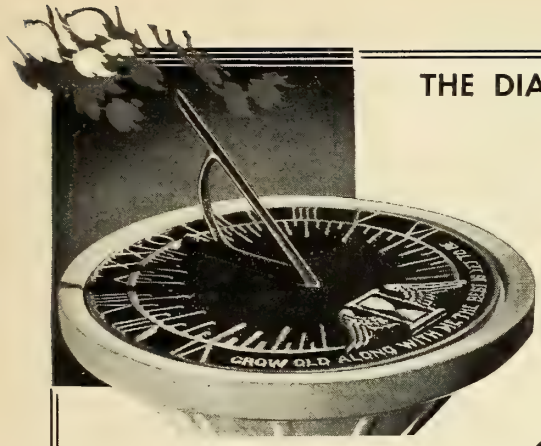
Dr. Robinson was a fellow of the American College of Surgeons and a member of the American Medical Association, the American Association for Thoracic Surgery, the Interurban Surgical Society and the Pacific Coast Surgical Association.

JOSEPH MOSES

Dr. Joseph Moses, a prominent physician of Northfield, Minnesota, died November 18, 1947, at the age of sixty.

Dr. Moses was born November 17, 1887, at Herman, Minnesota. His family came to Northfield in 1894. After attending Carleton College, he attended the University of Minnesota Medical School where he graduated in 1914. After serving an internship at Minneapolis

(Continued on Page 98)



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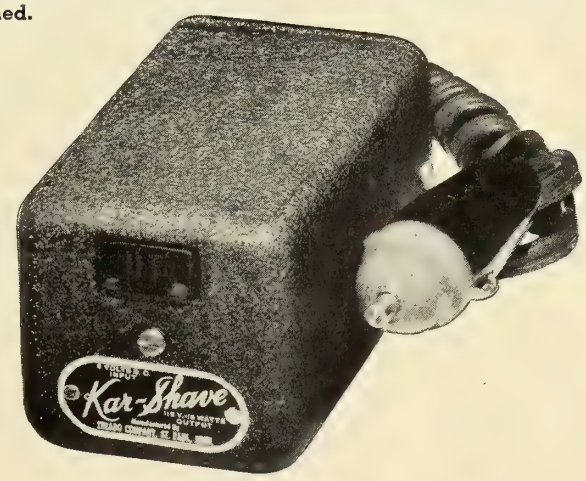
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(Continued from Page 96)

General Hospital, he practiced at Adams, Minnesota, and then enlisted as a lieutenant in the Army Medical Corps, being stationed at Fort Riley, and Camp Pike, Arkansas. Upon his discharge with the rank of Captain, he located at Northfield becoming associated with the late Dr. Warren Wilson.

Dr. Moses was a member of the Rice County Medical Society of which he was one time president, the Minnesota State and American Medical Associations. He was also chairman of the Rice County Public Health Association and during World War II served as medical examiner for war services. He was a charter member of the Northfield Lions Club, serving as president, of the Masonic Blue lodge, the Odd Fellows, the Workmen and the American Legion. Other activities included participation in the organization of the Community Chest, membership on the Board of Education, and serving as vice president of the Northfield National Bank.

A lifelong Democrat, Dr. Moses served for several years as a member of the Democratic State Central Committee and, in 1936, was one of the Minnesota delegates who went to Philadelphia to renominate President Roosevelt for his second term.

On June 8, 1915, Dr. Moses married Edith Elizabeth Street of Northfield, who with a brother, Roy, of Northfield, three nephews and a niece survive him.

JOHN STEVENS

Dr. John Stevens, a practitioner at Gonvick, Minnesota, for thirty-five years, died at his home, December 1, 1947, at the age of seventy-two.

Dr. Stevens was born at Rockland, Maine, November 26, 1876. He graduated from the University of Minnesota Medical School in 1897, and practiced at Belfast, Maine, from 1898 until 1911. Returning to Minnesota in 1911, he located temporarily at Bagley, but in 1912 moved to Gonvick. In 1921, he took postgraduate work at the Postgraduate Hospital in Chicago.

Dr. Stevens served as village health officer and for a number of years headed the Board of Education of Gonvick. During World War I, he served as a medical officer with the 88th Division overseas.

Dr. Stevens married Bessie Marden in the East before coming to Minnesota. He lost her in the influenza epidemic of 1918-19. Later he married Mabel Newman. He is survived by his widow and a son, John, Jr., and also by a son by his former marriage.

He was a member of the Red River Valley Medical Society, the Minnesota State and American Medical Associations.

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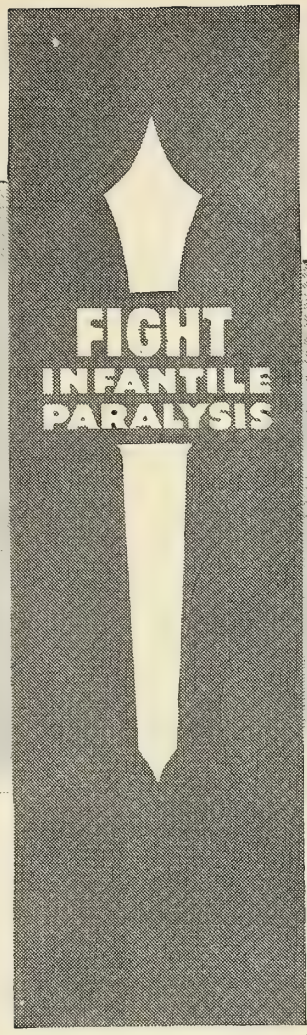
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Reports and Announcements

ARMY ORGANIZED RESERVE

A meeting of the 110th General Hospital of the Army Organized Reserve was held January 20, 1948, at 8:00 p. m. at Fort Snelling, Minnesota. Speaker of the evening was Lt. Col. Stanford Johnson, Director of Medical Administration, Branch 8 Veterans Administration, Minneapolis. Colonel Johnson gave a résumé of the conference which he attended December 15-19, 1947, at 5th Army headquarters in Chicago.

POSTGRADUATE COURSE IN DISEASES OF THE CHEST

The American College of Chest Physicians, Pennsylvania Chapter, and the Laennec Society of Philadelphia are sponsoring a postgraduate course in diseases of the chest to be held during the week of March 15-20, 1948, at the Warwick Hotel, Philadelphia, Pennsylvania.

The emphasis in this course will be placed on the newer developments in all aspects of diagnosis and treatment of diseases of the chest.

The course will be limited to thirty physicians. Tuition fee is $50 for members, and $90 for non-members.

Further information may be secured at the office of the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

NATIONAL CONFERENCE ON MEDICAL SERVICE

Chicago again plays host to the National Conference on Medical Service on February 8. Because the program features wide-open discussions of important controversial problems affecting medical practice, hospitals and nursing, the Conference promises to be of outstanding interest to general practitioner and specialist alike, according to Dr. F. F. Sladek, Traverse City, Michigan, secretary of the Conference.

President of the Conference, Dr. Creighton Barker, New Haven, Connecticut, will open the 1948 session in the Red Lacquer Room of the Palmer House at 9:30 a. m. The morning program will develop two viewpoints on the subject "The Practice of Medicine by Hospitals, Health Departments and Medical Schools" through papers presented by Everett W. Jones, general manager of the Modern Hospital, Chicago, and Dr. Lowell S. Goin, of Los Angeles. Dr. L. Fernald Foster, Bay City, Michigan, will speak on the subject, "Medical Public Relations Begin in the Doctor's Office." "Nursing Problems in America" will be reviewed by Dr. Thomas P. Murdock, of Meriden, Connecticut, and Janet Geister of Chicago.

The afternoon has been given over to panel presentations on the subjects, "General Practice and "Specialty Boards," participated in by Dr. Wingate M. Johnson, Winston-Salem, North Carolina; Dr. C. F. Wilkinson, Ann Arbor, Michigan; Dr. Leroy E. Parkins, Boston; Dr. Paul Titus, Pittsburgh, and Dr. C. N. H. Long, New Haven, Connecticut. This will be followed by discussion with general audience participation.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The thirteenth annual meeting of the Mississippi Valley Medical Society will be held at Springfield, Illinois, on September 29 and 30 and October 1, 1948, under the presidency of Dr. W. O. Thompson, professor of medicine at the University of Illinois. The society now has a membership of nearly 1,000.

MIDWEST RADIOLOGIC CONFERENCE

The 1948 Midwest Radiologic Conference will be held at the Hotel Schroeder, Milwaukee, February 6 and 7, and will be followed by the annual conference of teachers of radiology in Chicago on February 8. Principal speaker at a dinner to be held on the evening of February 6 will be Dr. Robert R. Newell, professor of radiology, Stanford University School of Medicine, San Francisco.

Inquiries concerning details of the meeting may be sent to Dr. A. Melamed, Secretary, Milwaukee Roentgen Ray Society, 425 East Wisconsin Avenue, Milwaukee 2, Wisconsin.

NICOLLET-LE SUEUR COUNTIES SOCIETY

At the annual meeting of the Nicollet-LeSueur Counties Medical Society in St. Peter on December 3, Dr. L. E. Sjostrom, St. Peter, was elected president to succeed Dr. Hobart Johnson, North Mankato.

Other officers elected at the meeting were Dr. Martin Henry, St. Peter, vice president, and Dr. Alfred Sherman, St. Peter, secretary-treasurer. Dr. E. G. Olman-

(Continued on Page 102)

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(Continued from Page 100)

son, St. Peter, was named as delegate to the state association meeting, with Dr. C. S. Strathern, St. Peter, as alternate.

GOODHUE COUNTY SOCIETY

Election of officers for the coming year was held at the annual dinner meeting of the Goodhue County Medical Society in Red Wing on December 4.

Dr. M. B. Flom, Cannon Falls, was named president of the society, while Dr. W. M. Akins, Red Wing, became vice president, and Dr. J. F. Brusegard, Red Wing, secretary-treasurer. Dr. R. F. Hedin, Red Wing, was named delegate to the state association meeting, with Dr. H. T. McGuigan, Red Wing, as alternate.

RAMSEY COUNTY SOCIETY

Newly elected officers of the Ramsey County Medical Society are Dr. J. R. Aurelius, president-elect; Dr. J. N. Gehlen, vice president, and Dr. Laurence D. Hilger, secretary-treasurer.

New president of the society is Dr. C. K. Williams, who was named president-elect one year ago and who succeeds Dr. John M. Culligan, retiring president.

ST. LOUIS COUNTY SOCIETY

Iron Range and Duluth practitioners gathered on December 11 at the Northland Country Club for the annual meeting and banquet of the St. Louis County Medical Society.

Principal speaker at the meeting was Harry C. Applequist, Duluth attorney, who delivered an address entitled "Lethargy in Our Social Order."

With election of officers, Dr. P. S. Rudie, Duluth, former president-elect, became president of the society, succeeding Dr. D. W. Wheeler, Duluth. Other officers elected at the meeting were Dr. Mark Tibbetts, Duluth, president-elect; Dr. J. P. Grahek, Ely, vice president, and Dr. Karl E. Johnson, Duluth, secretary.

SOUTHWESTERN MINNESOTA MEDICAL ASSOCIATION

In spite of adverse weather, more than fifty persons attended a meeting of the Southwestern Medical Association in Worthington on November 17.

Association members joined with auxiliary members for an evening smorgasbord dinner. After dinner, the two groups separated to conduct their respective programs. Association members heard Dr. John Moe, Minneapolis, speak on "Back Pain," illustrating his talk with motion pictures and slides. Members of the auxiliary heard an address on public relations by Mrs. Harold Wahlquist, national auxiliary public relations chairman.



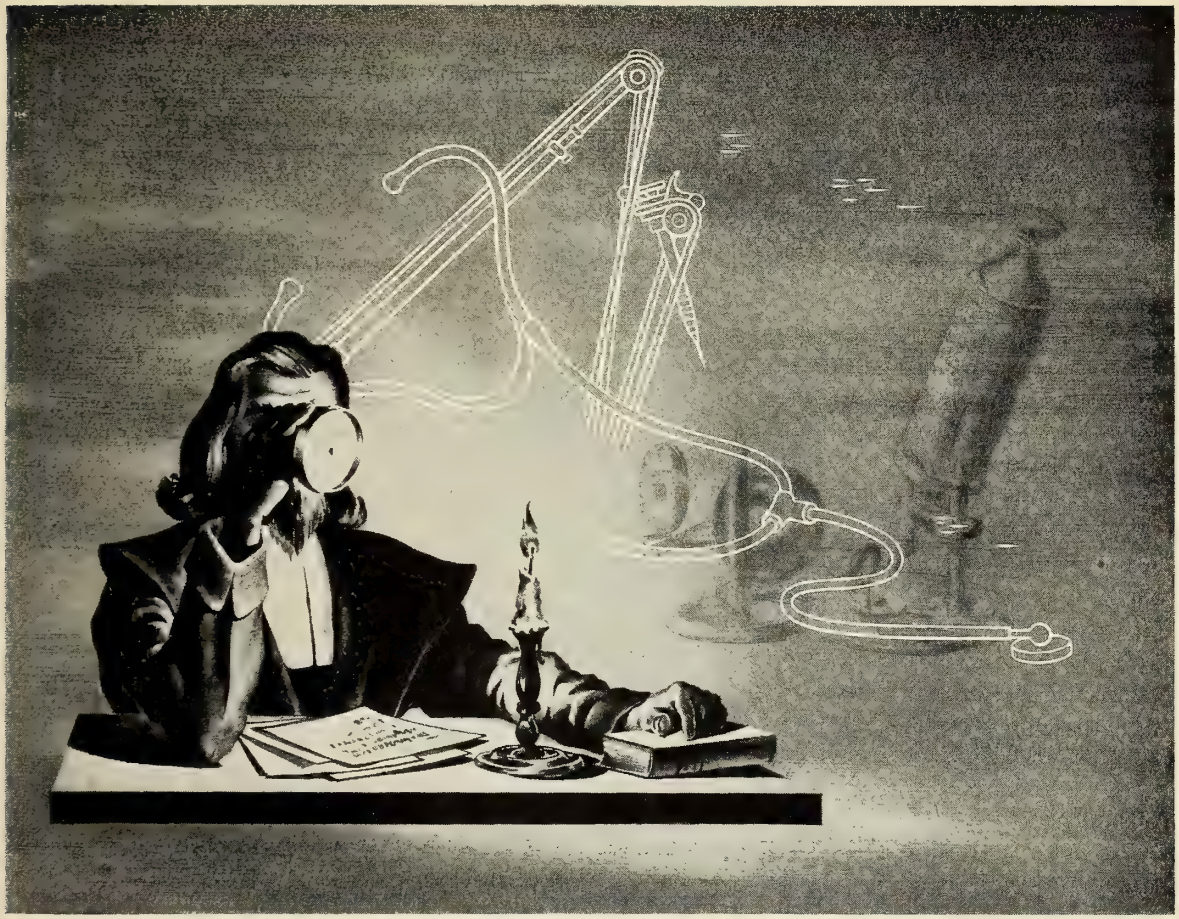
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But a doctor's legal liability was growing as fast as his knowledge. Sir Edward Coke, "father of the common law," ruled in 1615 that a doctor could be sued not only by a patient's employer for breach of contract, but also by the employee for malpractice.

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Of General Interest

In Royalton on December 2, municipal election results showed that Dr. A. M. Watson had been re-elected village president.

* * *

Dr. Frank S. Babb has opened offices at 625 Lowry Medical Arts Building, Saint Paul, for the practice of orthopedic surgery.

* * *

Dr. Dwight L. Martin has opened an office at 653 Lowry Medical Arts Building, Saint Paul, where he is limiting his practice to internal medicine.

* * *

On December 1, Dr. H. J. Setzer, Saint Paul, moved his office to a newly constructed clinical building at 1604 Randolph Avenue. Space in the one-story structure is shared by Dr. Setzer and a dentist, Dr. E. E. Petersen.

* * *

One of nine new directors recently elected to serve on the board of the Minnesota Public Health Association is Dr. Hans Johnson, Kerkhoven, who will serve for a term of three years.

* * *

Among the Minnesota physicians attending the convention of the American College of Physicians, held in Milwaukee, Wisconsin, on November 14 and 15, was Dr. R. V. Sherman of Red Wing.

* * *

Psychology in everyday living was discussed on December 8 by Dr. Maurice N. Walsh, Rochester, in a lecture in Owatonna sponsored by the Board of Library Trustees of that city.

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An additional office has been opened by Dr. James W. Reid, Saint Paul. He now maintains offices at 405 Fifteenth Avenue North, South Saint Paul, and at 458 South Robert Street, Saint Paul.

* * *

Announcement has been made by Dr. Walter R. Carley that his office is now located at 1457 Lowry Medical Arts Building, Saint Paul, with his practice limited to psychiatry.

* * *

Dr. William J. Hultgen has returned from military service and has opened an office at 939 Lowry Medical Arts Building, Saint Paul, with practice limited to eye, ear, nose and throat diseases.

* * *

"If I Had Asthma" was the title of an address given by Dr. L. E. Prickman, Rochester, at a meeting of the Des Moines County Medical Society in Burlington, Iowa, on December 9.

* * *

After recently completing a fellowship in neurology at the Mayo Clinic, Dr. E. M. Hammes, Jr., has become associated in practice with his father, Dr. Ernest M. Hammes, with offices in the Lowry Medical Arts Building, Saint Paul.

* * *

"Diagnostic Procedures in Vascular Diseases of the Extremities" was the subject of an address by Dr. W. F. Kvale, Rochester, at a meeting of the American Academy of Dermatology and Syphilology in Chicago early in December.

* * *

Announcement has been made that Dr. Henry W. Woltmann of Rochester was elected president of the Association for Research in Nervous and Mental Disease at the organization's annual meeting in New York in December.

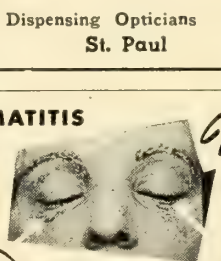
* * *

Dr. H. L. Williams, Rochester, presented a paper on "Diagnosis and Treatment of Chronic Suppurative Disease of the Paranasal Sinuses" at a meeting of the Chicago Laryngological and Otological Society in Chicago on December 1.

* * *

Members of the Fifth District Minnesota Federation of Women's Clubs heard Dr. Sumer S. Cohen, assistant medical director of Glen Lake Sanatorium, discuss the

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Christmas Seal streptomycin fund at a meeting held in Minneapolis on November 29.

* * *

"Factors Influencing Survival and Death in Coronary Artery Disease" was the title of a paper presented by Dr. F. A. Willius, Rochester, at a meeting of the regional division of the American College of Physicians in Galveston, Texas, during the first week of December.

* * *

Forty-one children, ten of them Indians from the Red Lake Reservation were examined at a crippled children's clinic conducted in Beltrami County during the last half of November. The clinic was held in Bemidji and in several other communities in the county.

* * *

On December 13, Dr. Paul F. Dwan, Minneapolis, president of the newly organized Minnesota Heart Association, announced that the organization had been officially recognized as an affiliate of the American Heart Association.

* * *

Dr. Charles D. Freeman, Saint Paul, has announced his retirement from practice. His dermatology practice will be continued by his son, Dr. Charles D. Freeman, Jr., with offices at 1160 Lowry Medical Arts Building, Saint Paul.

* * *

Dr. Roy T. Pearson, Shakopee, was appointed medical director of Mudcura Sanitarium following the death on October 14 of Dr. Henry E. Wunder, director of the sanitarium for twenty years. Dr. Pearson's brother, Dr. B. F. Pearson, is associated with him on the staff.

* * *

The Order of Yun Hui (Beautiful Cloud) has been awarded Dr. J. H. Grindlay, Rochester, by direction of Chiang Chung-Cheng, president of the national government of the Republic of China. The decoration was conferred for meritorious services carried out during the war in the Orient.

* * *

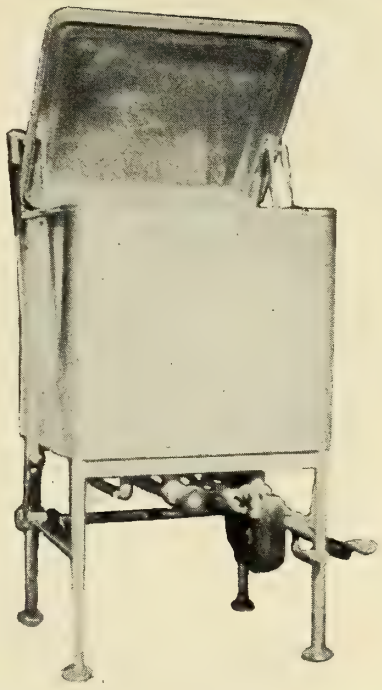
Members of the Western Surgical Association, meeting on December 4 at Colorado Springs, heard Dr. H. W. Meyerding of Rochester present a paper entitled "Comments on the Differential Diagnosis and Treatment of Painful Stiff Shoulder." With his paper, Dr. Meyerding showed a motion picture on the same subject.

* * *

When a postgraduate course on physical medicine was held at New York Polyclinic Hospital in New York during the first week of December, Dr. W. B. Martin of Rochester presented two papers entitled "Microwaves (Radar) as a Source of Therapeutic Heat" and "The Medical Applications of Atomic Energy."

* * *

At the annual meeting of the Hennepin County chapter of the American College of Physicians and Surgeons, held in Minneapolis in November, Dr. Willis M. Duryea and Dr. John H. Higgins, of Minneapolis, were elected president and vice president, respectively, while Dr. James A. Blake, Hopkins, was elected secretary-treasurer.



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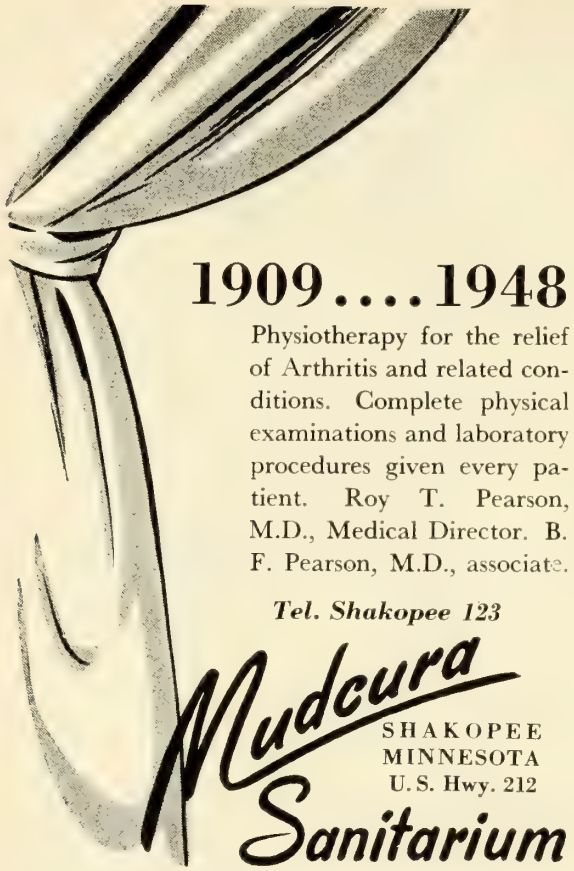
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Formerly of California, Dr. Walter H. Sutherland purchased the building and practice of Dr. C. L. Scofield, Benson, and began practice in Benson on December 1. After graduating from the College of Medical Evangelists, Los Angeles, California, in 1944, Dr. Sutherland served in the army until April, 1947.

* * *

In November, Dr. J. K. Butler of Carlton announced the opening of offices in Cloquet for the practice of Medicine and surgery. The offices are in the Trico Building at 12th and Cloquet Avenue, with office hours from 9:00 a.m. to 5:00 p.m. weekdays and 9:00 a.m. to 12:00 noon on Saturdays.

* * *

Formerly of Spring Grove, Dr. Orville M. Rotnem has moved to Mabel and opened offices for the practice of medicine. A graduate of the University of Minnesota Medical School, Dr. Rotnem practiced at Spring Grove after his release from the armed forces in May, 1947.

* * *

On behalf of the national Fraternal Order of Eagles, the Rochester chapter on November 18 presented Dr. Charles W. Mayo with a bronze plaque for distinguished service to the nation, "in recognition of contributions to the welfare of our country and active participation in civic affairs." Dr. Mayo is the fourth person to be so honored by the fraternal organization.

* * *

Principal speaker at the first annual meeting of the Faribault County Public Health Nursing Service, held in Blue Earth on November 20, was Dr. Robert N. Barr, chief of the section of administration in the Minnesota Department of Health. The meeting was held in conjunction with a meeting of the Blue Earth Parent-Teachers Association.

* * *

In recognition of his work in directing the Steele County x-ray survey, the Trudeau Medical Society at a meeting in November elected Dr. J. F. Shaefer, Owatonna, to membership in the group. In addition to directing the county-wide x-ray survey, Dr. Shaefer has been a member of the board of the Cannon Falls tuberculosis state sanatorium since 1946.

* * *

"Does Allergy Interfere with the Child's Development?" was the topic discussed by Dr. Albert V. Stoesser at a meeting of Section I of the Child Psychology Study Circle in Minneapolis on December 1. Dr. Stoesser is clinical professor of pediatrics at the University of Minnesota Medical School and director of the allergy clinics at the University and at Minneapolis General Hospital.

* * *

A senior physician at the Fergus Falls State Hospital since June, 1941, Dr. Werner Hemstead has resigned his position and has moved to Minneapolis to live with his son.

Fifty-five years of medical practice in Minnesota lie behind Dr. Hemstead, including twenty years as physician at the St. Cloud reformatory.

FOURTH ANNUAL CLINICAL CONFERENCE *of the* CHICAGO MEDICAL SOCIETY

Palmer House, Chicago, Illinois
March 2, 3, 4, 5, 1948

If you have attended one of these Conferences you probably are planning to come again in 1948. If you have not yet attended one, you should make plans now to be present.

These four days are packed full of many interesting features:

Subjects covering many fields of medicine are presented by outstanding speakers from all sections of the country.
Scientific exhibits on many topics presented attractively.
Technical exhibits unusually well presented on all the new drugs and equipment.
Panel discussions to arouse your interest.

Plan now to attend and make your own reservation at the Palmer House, Chicago so that you will not be disappointed!

At the start of the New Year, Dr. David Feigel, formerly of the Branton Clinic in Willmar, moved to Graceville and joined the staff of the Dr. I. L. Oliver Clinic. He replaced Dr. Gordon Vaughn, who, after practicing at the Oliver Clinic for four months, left for Minneapolis on December 20 to take postgraduate work at Minneapolis General Hospital.

* * *

The Chicago Medical Society has commenced publication of a weekly bulletin, *This Week in Chicago Medicine,* for the information of physicians who visit Chicago. Copies will be widely distributed throughout the country, are available at certain Chicago hotels, and may be obtained from the headquarters of the Chicago Medical Society, 30 North Michigan Avenue, Chicago.

* * *

Plans and possible projects of the newly organized Mower County Health Council, first of its kind in the state, were described by Dr. Paul C. Leck, Austin, when he spoke to the Lions Club in Austin on December 8. Dr. Leck, as chairman of the Rural Medicine Committee of the Minnesota State Medical Association, is in charge of the county health council project in Minnesota.

* * *

On December 9, a group of physicians from China, Japan, Brazil, Hawaii, Central America and Mexico—most of them taking postgraduate work in public health at the University of Minnesota—visited Lafayette School in Saint Paul to observe the school's nutrition clinic. Under the auspices of the Christmas Seal organization, the clinic discovers nutritional needs of children and then provides hot lunches to meet those needs.

* * *

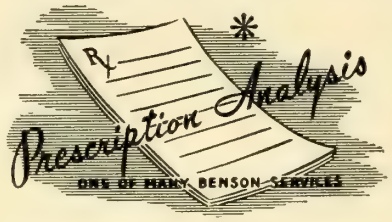
"Emotional Disturbances during Childhood and Their Effect on Adult Maladjustments" was the title of an address presented by Dr. Gordon R. Kamman, Saint Paul, at the annual meeting of the McLeod County Public Health Association in Glencoe on October 28. In Chicago on November 18, Dr. Kamman spoke on "The Value of the Rorschach" at a meeting of the Illinois Association for Applied Psychology.

* * *

Named outstanding practitioner of Goodhue County, Dr. M. R. Williams of Cannon Falls was the candidate of the Goodhue County Medical Society for the honor of being selected outstanding practitioner in Minnesota. Dr. Williams was given the county award in recognition of his work during the past several years, especially during the war years when he carried on as the only physician in Cannon Falls.

* * *

The King Haakon VII liberty medal has been presented to Dr. Ivar Sivertsen, Minneapolis, for services rendered to Norway's cause during World War II. Presentation of the medal was made at a banquet at the Minneapolis Athletic Club on December 12, 1947.



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Dr. Sivertsen examined all members of the Norwegian Air Corps who passed through Minneapolis during the war on the way to Camp Little Norway, Canada. Ten years ago Dr. Sivertsen was presented with the Cross of St. Olaf by the Norwegian government.

* * *

Zumbrota acquired a new physician in December when Dr. C. S. Youngstrom, formerly of La Crosse, Wisconsin, opened offices for the practice of medicine and surgery. A graduate of the Nebraska College of Medicine, Dr. Youngstrom has taken postgraduate work at the University of Wisconsin and at Henry Ford Hospital, Detroit, Michigan. Before moving to Zumbrota, he was associated with the Gunderson Clinic in La Crosse, Wisconsin.

* * *

Recently of Jacksonville, Illinois, Dr. Gladys Trommald has been appointed assistant superintendent of Anoka State Hospital, to serve with Dr. Edmund Miller, superintendent. Not new to Anoka, Dr. Trommald was on the staff of the Anoka State Hospital from 1936 to 1939. Since then she has taken postgraduate work in neurology and psychiatry at the University of Minnesota, has studied at the Wayne County training school in Northville, Michigan, and has been on the staff of the state hospital at Jacksonville, Illinois.

* * *

Guatemala vacations are the solution to winter's problems in the minds of two Minneapolis physicians. Dr. and Mrs. S. Marx White will leave Minneapolis on January 28 for a six-week vacation in Central America, with much of the time being spent in Guatemala. On February 14, Dr. and Mrs. Alfred T. Baker of Minneapolis will sail from New Orleans with a group of friends, planning to vacation for some time in Chichicastenango, an Indian village in the mountains of Guatemala.

* * *

Mental health problems in Minnesota were discussed by Dr. Alexander G. Dumas, assistant clinical professor of psychiatry at the University of Minnesota, at a meeting in Virginia on November 19 of the Virginia Branch of the American Association of University Women. The meeting was open to the public.

As medical director of the Minnesota Mental Hygiene Society, Dr. Dumas described the widespread extent of mental illness, the dearth of facilities and trained personnel for treating mental diseases, and the lack of public knowledge and understanding of mental illnesses.

* * *

At a meeting of the board of directors of Community Health Service, held in Minneapolis in November, Dr. Donald Hastings, head of psychiatry and neurology at the University of Minnesota, stated that top attention should be given to the training of the family physician in psychiatric science. One of his reasons was the fear that not enough psychiatrists would be trained in the next fifty years to meet the demand. The general practitioner, he said, is the "most important cog in the whole machine as far as helping the greatest number of emotionally upset people is concerned."

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MAY RESEARCH

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In November, Dr. Ervin Pumala, formerly of Minneapolis, arrived in Warren to become a staff member of the Warren Clinic.

Dr. Pumala, a graduate of the University of Minnesota Medical School in 1940, served in the armed forces during the war, then began medical practice in Minneapolis. His major interest is in x-ray work and diagnosis.

In addition to Dr. Pumala, the staff of the Warren Clinic now includes Dr. C. H. Holmstrom, Dr. M. J. Bechtel and Dr. A. B. Nietfeld.

* * *

During the first week of December, Dr. J. D. Camp and Dr. P. F. H. Pugh, Rochester, were in Boston attending a meeting of the Radiological Society of North America. Dr. Camp presented a paper entitled "Chronic Idiopathic Hypertrophic Osteo-arthropathy," which was written in collaboration with Dr. Robert L. Scanlan, also of Rochester. Dr. Camp also presented an exhibit on "A Grid Front Casette: A Useful Application of the Stationary Grid" and gave two refresher courses entitled "Roentgenography of the Skull" and "Encephalography and Ventriculography." Dr. Pugh presented a refresher course on "The Examination of the Colon."

* * *

Unique in Minnesota was a cancer detection clinic held December 13 in Fergus Falls, with six Duluth physicians serving as department heads.

Housed in a school building, the clinic accommodated 400 residents of Fergus Falls and vicinity who had registered to be examined. Physicians of Fergus Falls assisted the Duluth specialists in conducting the clinic, which was co-sponsored by the Park Region District County Medical Society and the Minnesota Division of the American Cancer Society.

Clinic departmental heads from Duluth were Dr. Charles H. Mead, surgery; Dr. O. B. Patch, eye, ear, nose and throat; Dr. L. L. Merriman, internal medicine; Dr. M. G. Fredricks, dermatology; Dr. Russell J. Moe, gynecology, and Dr. Arthur H. Wells, pathology.

A technicolor motion picture, "The Traitor Within," was shown as part of a cancer lecture given by Dr. Wells, who is chairman of the cancer committee of the Minnesota State Medical Association. The lecture, held in connection with the cancer detection clinic, was open to the public.

* * *

Dedication of the "great hall" of the Mayo Foundation House as "Balfour Hall," in honor of Dr. Donald C. Balfour, director emeritus of the Mayo Foundation, took place at the annual business meeting of the Mayo Clinic staff on November 17. Dr. Balfour was presented with a scroll to commemorate the occasion by Dr. L. M. Randall, who represented the clinic staff.

At a ceremony on December 2, a life-sized oil portrait of Dr. Balfour was presented to the Mayo Foundation by the Association of Fellows of the Mayo Foundation.

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Dr. J. D. Rogers, president of the Fellows association, made the presentation to Dr. Victor Johnson, Foundation director.

* * *

Better training for physicians who plan to become general practitioners was emphasized by Minnesota physicians in their replies to a questionnaire sent out by the University of Minnesota's Department of Postgraduate Medical Education.

Preliminary results of the survey at the end of November also indicated that most physicians feel that one to five years of general practice would be of advantage to physicians before specializing, and that most men now in practice prefer a partnership or group-clinic type of practice. The physician who wanted his own individual practice, without even an assistant, was a rarity.

At the time that these results were announced by Dr. Thomas E. Eyres, who is in charge of the survey, more than one-third of the 2,900 questionnaires sent out had been returned. After completion and tabulation of the survey, which included numerous other queries, a final analysis of the results will be published by Dr. Eyres.

* * *

Appointment of Dr. Francis F. Callahan, Pine City, as chief of the medical services of the State Division of Social Welfare, was announced December 13 by Jarle Leirfallom, director.

Succeeding Dr. Edwin J. Simons, Swanville, who resigned in October, Dr. Callahan is responsible for planning and programming the state crippled children services and the institutional control of tuberculosis in the state, and for the administration of the state sanatorium at Walker. He also acts as medical consultant of county welfare agencies throughout the state.

Dr. Callahan, a graduate of the University of Maryland in 1913, has specialized in tuberculosis work since 1916. He was medical director of Pokegama Sanatorium from 1919 to 1942, when he became superintendent of the state sanatorium at Walker. In 1946 he resigned as superintendent to enter private practice in Saint Paul.

* * *

A five-man committee to direct a radio-isotope research program at Minneapolis Veterans Hospital has been appointed by Dr. Harold S. Diehl, chairman of a committee on medical education for the Veterans Administration.

Heading the new committee as chairman is Dr. Wallace Armstrong, chief of the Department of Physiological Chemistry in the University of Minnesota Medical School. The other four members of the committee are Dr. John Tate, University professor of physics; Dr. Samuel Nesbit, Veterans Hospital physician; Dr. Howard Horns, of the University's Department of Medicine, and Dr. Karl Stenstrom, professor of biophysics at the University.

The Veterans Administration has made $25,000 available to establish the program in Minneapolis. Radioisotopes will be obtained from the Atomic Energy Commission.



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After retiring from practice in 1942, Dr. N. O. Pearce, Minneapolis, is again leading an active medical life.

Recently appointed director of the Division of Cancer Control, Minnesota Department of Health, Dr. Pearce has a long history of medical work in Minnesota. After graduating from the University of Minnesota Medical School in 1905, he practiced in Hibbing until 1914, when he accepted a teaching position in pediatrics at the University. In 1918 he returned to private practice in pediatrics and continued in that field in Minneapolis until 1934. He then practiced for eight years in Miami, Florida, finally retiring in 1942. Shortly after that he found himself engaged in supervisory work with the Minnesota Department of Health, upon the invitation of its executive officer, Dr. A. J. Chesley.

Today, under the direction of Dr. Pearce, the Division of Cancer Control is correlating and co-ordinating the work of medical groups concerned with the control of cancer. For Dr. Pearce, retirement is now a thing of the past.

* * *

After twenty years of practice in Elmore, Dr. Arno W. Sommer will close his office and move to Temple, Texas, to become radiologist with the Scott White Clinic.

The Elmore practice is being taken over by Dr. Harry Shragg, formerly of Minneapolis, and Dr. Troy Rollins, formerly of Blue Earth.

Before moving to Elmore in 1927, Dr. Sommer received his medical training at the University of Minnesota, interned at the Northern Pacific Railroad Hospital, and studied at St. Paul and Swedish Hospitals in the Twin Cities. While in Elmore, he was active in many civic organizations and at one time was president of the Elmore Board of Education.

The successors to his practice, Dr. Shragg and Dr. Rollins, studied medicine at the University of Minnesota Medical School. Dr. Rollins is now interning at Minneapolis General Hospital. Dr. Shragg took over the practice in Elmore on January 1; he will be joined by Dr. Rollins in July.

* * *

"After-effects of the atom bomb have been exaggerated," stated Dr. Irving McQuarrie, head of the University of Minnesota's Department of Pediatrics, when he returned December 15 from a three-month study of medical education, research and hospitals in Japan.

"I found cases of persons suffering from scars and anemia," he said, "but their numbers were not as great nor their condition as serious as we had been led to expect."

Since many hospitals and medical centers had been housed in buildings built to withstand earthquakes, they stood up quite well against wartime bombings, Dr. McQuarrie said.

He found that Japan's health is impaired by inadequately trained physicians and by approximately 80,000 "quacks" who practice blood-letting. Many of the

"physicians" were students hurriedly trained as a wartime emergency, who are now being returned to medical schools for another year, to be followed by a period of internship.

Dr. McQuarrie went to Japan for the three-month study at the request of the Rockefeller Foundation.

* * *

According to a recent announcement, the National Cancer Institute of the United States Public Health Service has awarded nearly $750,000 in forty-six grants for clinical and basic biological research.

The Pasteur Institute of Paris and the Hebrew Institute in Palestine are among those receiving grants. For the first time, the National Advisory Cancer Council, composed of outstanding cancer specialists of the country, has made grants to agencies outside the United States.

The University of Minnesota has been awarded three grants: one to Dr. George E. Moore to investigate the use of fluorescein dyes in the detection of malignant tissue; one to Dr. David Glick to make histochemical studies on the stomach in relation to cancer; and one to Dr. Owen H. Wangensteen to attempt to identify a precursor group in gastric cancer.

In addition, twenty-six medical schools have been awarded grants totalling $593,130 for the improvement of cancer teaching, and $132,645 for cancer control projects. An additional grant of $250,000, contingent on the securing of additional funds totalling $650,000, was made to the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Maine, for replacing the laboratory which was destroyed by fire last fall.

Previously, all state departments of health had been allocated sums totalling $2,500,000 for cancer control projects.

Allotments were made out of the United States Public Health Service funds.

HOSPITAL NEWS

It was announced on November 20 that the Mankato city council had approved the recommendation of Dr. A. F. Kemp, city health officer, to supply oxygen equipment for the Mankato Detention Hospital. It was estimated that the equipment would cost $150 to $200.

* * *

Possible future expansion of the Spring Grove Hospital was provided for in November when the hospital board of directors decided unanimously to purchase an additional lot adjacent to the present hospital grounds. Included among the members of the board of directors is Dr. J. W. Helland, Spring Grove.

* * *

On November 23 it was announced that Miller Hospital in Saint Paul planned to start the Charles T. Miller School of Practical Nursing. Dr. Peter Ward, administrative director of the hospital, in making the announcement, stated that the school would offer a one-year course in various aspects of nursing and would be



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open to young women between the ages of eighteen and thirty-five years.

According to Thelma Dodds, superintendent of nurses, about twenty-five persons were expected to be enrolled in the first class.

* * *

The need for a community hospital in Stewartville, Olmsted County, was reviewed by Dr. William F. Braasch, Rochester, early in November at a meeting of the Stewartville Community Club.

Pointing out that the nearest hospital was forty miles away in Rochester, Dr. Braasch stated, "It is astounding that there has never been a community hospital here before. The need is so great that steps should be taken at once. . . . Construction should begin next spring—and no later."

He stated that only 20 per cent of illnesses required highly specialized care and that a community hospital would better serve the moderate income group, the old age group and the laborer who may have a minor injury or illness.

* * *

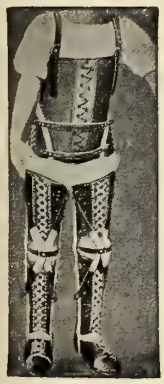
Directors of the International Falls Memorial Hospital have announced the appointment of Marie E. Jarshaw as superintendent of the hospital, which is now being equipped for service. Miss Jarshaw, a graduate nurse of the Deaconness Hospital in Grand Forks, North Dakota, has been administrator of St. Luke's Hospital in Thief River Falls for the past four years.



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Surgery of Colon and Rectum, one week, starting March 8, April 26.
Surgical Pathology, every two weeks.
FRACTURES AND TRAUMATIC SURGERY—Intensive course, two weeks, starting April 26.
GYNECOLOGY—Intensive course, two weeks, starting February 23, March 29.
Personal course in Vaginal Surgery, starting February 16, March 22.
OBSTETRICS—Intensive course, two weeks, starting March 15, April 12.
MEDICINE—Intensive course, two weeks, starting April 26.
Personal course in Gastroscopy, two weeks, starting March 29, April 19.
Electrocardiography and Heart Disease, four weeks, starting February 16, May 3.
CYSTOSCOPY—Ten-day course, starting January 5, January 19, February 2.
DERMATOLOGY—Formal course, two weeks, starting April 26.
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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

HANDBOOK OF FRACTURES. Duncan Eve, Jr., M.D., F.A.C.S. Surgeon-in-Chief Nashville, Chattanooga and St. Louis Railroad; District Surgeon, Louisville and Nashville Railroad; Associate Professor of Surgery, Vanderbilt University School of Medicine, etc. 263 pages. Illus. Price $5.00, cloth. St. Louis: C. V. Mosby Co., 1947.

400 YEARS OF A DOCTOR'S LIFE. Collected and arranged by George Rosen, M.D., and Beate Caspari-Rosen, M.D. 429 pages. Price, $5.00, cloth. New York: Henry Schuman, Publisher, 1947.

DIABETES MELLITUS in General Practice. Arthur R. Colwell, M.D. Associate Professor of Medicine and Director of Medical Specialty Training, Northwestern University Medical School; Attending Physician Evanston Hospital, Evanston; Consulting Physician, Wesley Memorial Hospital, Chicago. 350 pages. Illus. Price $5.25, cloth. Chicago: Year Book Publishers, 1947.

EMOTIONAL MATURITY. The development and dynamics of personality. Leon J. Saul, M.A., M.D. Associate Professor of Psychiatry, Temple University School of Medicine; Special lecturer in Psychiatric Information, Bryn Mawr College. 338 pages. Illus. Price $5.00, cloth. Philadelphia: J. B. Lippincott Co., 1947.

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SEXUAL BEHAVIOR IN THE HUMAN MALE. Alfred C. Kinsey, Professor of Zoology, Indiana University, Wardell B. Pomeroy, Research Associate, Indiana University, and Clyde E. Martin, Research Associate, Indiana University. 804 pages. Illus. Price $6.50, cloth. Philadelphia: W. B. Saunders Co., 1948.

SYNOPSIS OF NEUROPSYCHIATRY. Second Edition. Lowell S. Selling, M.D., Ph.D., Dr.P.H., F.A.C.P. Director of Division of Mental Health, Florida Department of Health; Formerly Attending Neuropsychiatrist, Deaconess Hospital; Associate Attending Neuropsychiatrist, Mt. Carmel Mercy Hospital and Wayne County General Hospital; Director Psychopathic Clinic, Recorder's Court, Detroit; Assistant Professor of Criminology, Medical Jurisprudence and Social Hygiene, University of Illinois College of Medicine; Lecturer in Psychology, Wayne University; Visiting Professor of Psychology, Iowa State College. 561 pages. Illus. Price, $6.50, cloth. St. Louis: C. V. Mosby Co., 1947.

UNIPOLAR LEAD ELECTROCARDIOGRAPHY. Including Standard Leads. Unipolar Extremity Leads and Multiple Unipolar Precordial Leads. Emanuel Goldberger, B.S., M.D. Adjunct Physician, Montfiore Hospital, New York; Cardiographer and Associate Physician, Lincoln Hospital, New York; Diplomate of the American Board of Internal Medicine; Clinical Lecturer in Medicine, Columbia University Faculty of Medicine. 182 pages. Illus. Price, $4.00, cloth. Philadelphia: Lea & Febiger, 1947.

THE FOOT AND ANKLE. Third Edition. Injuries, Diseases, Deformities and Disabilities. Philip Lewis, M.D., F.A.C.S. Professor of Bone and Joint Surgery and Acting Head of Department, Northwestern University Medical School; Professor of Orthopedic Surgery, Postgraduate Medical School, Cook County Hospital. 847 pages. Illus. Price, $11.00, cloth. Philadelphia: Lea & Febiger, 1947.

DISEASES OF THE NOSE, THROAT AND EAR. Ninth Edition. William Lincoln Ballenger, M.D., F.A.C.S. Late Professor, School of Medicine, University of Illinois; and Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Chicago. Assisted by John Jacob Ballenger, B.S., M.D., Research Fellow in Otolaryngology, Northwestern University School of Medicine, Chicago. 993 pages. Illus. Price, $12.50, cloth. Philadelphia: Lea & Febiger, 1947.

A PRIMER OF CARDIOLOGY. George E. Burch, M.D., F.A.C.P. Associate Professor of Medicine, Tulane University School of Medicine; Senior Visiting Physician, Charity Hospital; Consultant in Cardiovascular Diseases, Ochsner Clinic; and Paul Reaser, M.D., Instructor in Medicine, Tulane University School of Medicine; Assistant Visiting Physician, Charity Hospital, New Orleans. 272 pages. Illus. Price, $4.50, cloth. Philadelphia: Lea & Febiger, 1947.

PRACTICAL X-RAY TREATMENT. Arthur W. Erskine, M.D. Chief radiologist, St. Luke's Methodist Hospital and Mercy Hospital, Cedar Rapids, Iowa; past Chairman of Section on Radiology of the AMA. Third edition. 156 pages. Illus. Price, $4.50, cloth. Saint Paul and Minneapolis: Bruce Publishing Company, 1947.

The author has once more revised and brought up to date his excellent book on x-ray treatment, partly in the light of continuing developments in the art but particularly in the light of his own large experience in an active radiation-therapy practice. The new edition, as was the

case with the previous two editions, shows how one successful radiation therapist uses roentgen therapy and, to some extent also, radium therapy. Dr. Erskine shows how better results can be realized from the equipment at one's disposal by attention to a proper power supply, to safety measures, and to accuracy in calibration, both as to quality and quantity. He stresses intelligence and skill in the planning of treatment for the particular case, with especially careful use of the now readily available and reliable depth distribution data, an adequate range of which is included in the book—either assembled for easy reference from other sources, or, where necessary, modified without loss of validity to suit his own particular requirements.

The author feels that there should be as much standardization and simplification as possible of the various voltages, filtrations, target-field distances, et cetera, that are employed, and he confines himself to practically only two voltages, 135 and 200 kvp. Of course, in view of the necessary use of several different filtrations and target-skin distances for each voltage, a considerable number of intensity and distribution tables are therefore still necessary.

Attention is called to the probable fact that there is no difference in the biological effect of different wavelengths, provided the same actual dose is absorbed, and that the only need for different penetrations, therefore, is the ability to get the radiation to where it is needed, with the least possible effect superficial to the area which one desires to treat. Though he does not use supervoltage equipment, the author rightly believes that the only reason for using very high voltages would be the high percentage depth doses obtained, but that this type of therapy is uneconomical because of the higher cost involved.

In the chapter on skin diseases the treatment of the various hemangiomata and vascular nevi is more elaborated than in the previous edition. Since the advent of shockproof tubes, x-ray treatment is preferred to radium for treatment of the vascular nevi. However, care must be used in the treatment of vascular tumors near epiphyses of infants, to avoid interference with growth.

Skin cancer is now included in the chapter on malignant tumors—a more logical arrangement.

Infections, such as erysipelas, palmar abscess, felon, postoperative parotitis, sinusitis, virus pneumonia, gas bacillus infection, arthritis of some types, which are effectively treated by irradiation are discussed in a separate chapter.

Other nonmalignant conditions, such as hyperthyroidism, tuberculous lymph nodes, uterine hemorrhage and fibroid tumors, are covered quite adequately for the size of the volume.

The relation of the radiologist to the cancer problem is treated in a separate chapter and is discussed more fully than in the previous editions.

Cancer of the various organs is, in some cases, discussed more extensively, especially transvaginal x-ray treatment of cancer of the cervix, which the author prefers to radium whenever it can be efficiently applied, as the uniformity and adequacy of deep dosage exceed that of the best radium technique.



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Hodgkin's disease, lymphosarcoma and leukemia are also discussed in the chapter on malignant conditions.

All in all, this is a useful book for anyone doing radiation therapy. The new volume is a definite modernization of the now eleven-year-old second edition, which had five reprintings.

EDWARD SCHONS, M.D.

THE YEARS AFTER FIFTY. By Wingate Johnson, M.D., Professor of Clinical Medicine and Chief of Private Diagnostic Clinic, Bowman Gray School of Medicine of Wake Forest College; Recent Appointee, Board of Trustees, the AMA. New York: Whittlesey House, McGraw-Hill Book Company, Inc. Price $2.00.

This short booklet will provide a very satisfactory evening's reading for any doctor with any degree whatever of geriatic understanding. It has some informative reading matter, which we may suggest or provide for many patients, for whom guidance in "growing old gracefully" has many advantages.

The author quotes avidly and well, and captions each well-devised chapter by inspiring excerpts from ageless literature. He draws all the way from Plato, Cicero and Saint Paul through Shakespeare, Samuel Johnson and Osler to Alvarez, Cowdry and Stieglitz. Needless to say, this philosophical connotation (as implied when Job laments, or Paul exults) dominates where the general purpose is to catalogue why the longer life of accomplishment and travail yields so abundantly in comparison to the life of speed and merriment.

It might be stated that the book is almost too concise to yield adequate information on the many subjects covered; perhaps it has been written and will best suffice as an introduction for those who will seek more information in the countless sources now easily available. The author writes as a wise and experienced internist, giving his impressions of what medicine now offers, to promote the comfort and usefulness of the ever-increasing group of our citizenry living beyond sixty years. The

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E. L. TUOHY, M.D.

SYNOPSIS OF ALLERGY. Second Edition. Harry L. Alexander, A.B., M.D., Professor of Clinical Medicine, Washington University, School of Medicine, St. Louis; Editor of *The Journal of Allergy*. 255 pages. Illus. Price, $3.50. St. Louis: C. V. Mosby Company, 1947.

Certified as an allergist by the American Board of Internal Medicine in 1938 and enrolled as an active member in several national allergy associations, Dr. Alexander is well qualified to write this Synopsis of Allergy, of which this is the second edition. The first edition was published in 1941.

The contents cover history, atopy, bronchial asthma, hay fever, atopic rhinitis, gastrointestinal allergy, headache, conjunctivitis and other atopic disorders, allergic dermatoses, physical allergy, drug allergy, serum allergy, bacterial allergy, and vascular allergy. At the end is an appendix, which gives briefly, tests, diagnostic methods, elimination diets, et cetera, and a bibliography, which includes eighty-five references to books and journals.

The author gives a good, concise review of his subject, though it is too brief in its consideration of physical and emotional factors as they affect the allergic individual.

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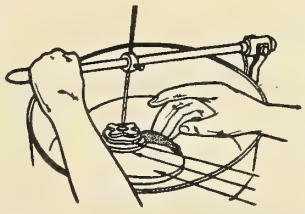
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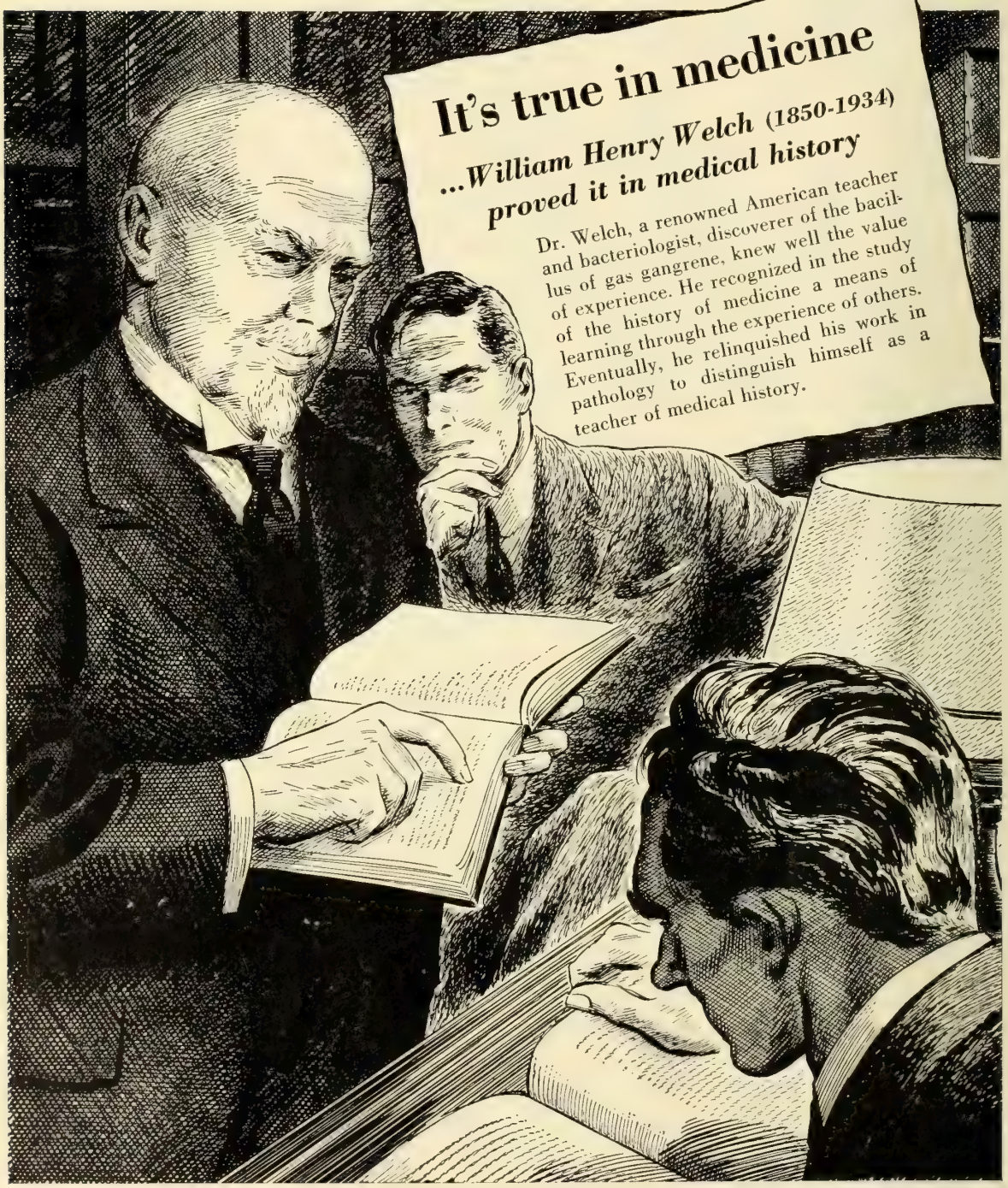
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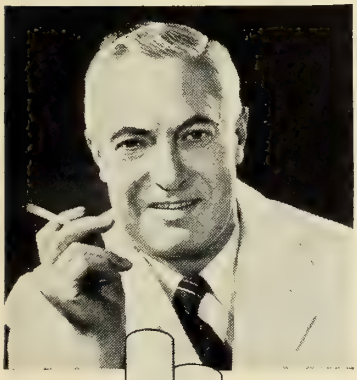
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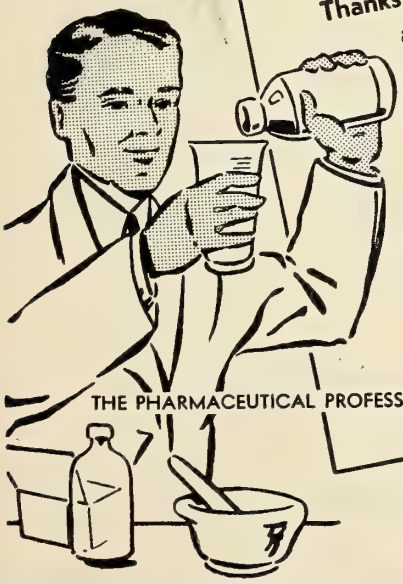
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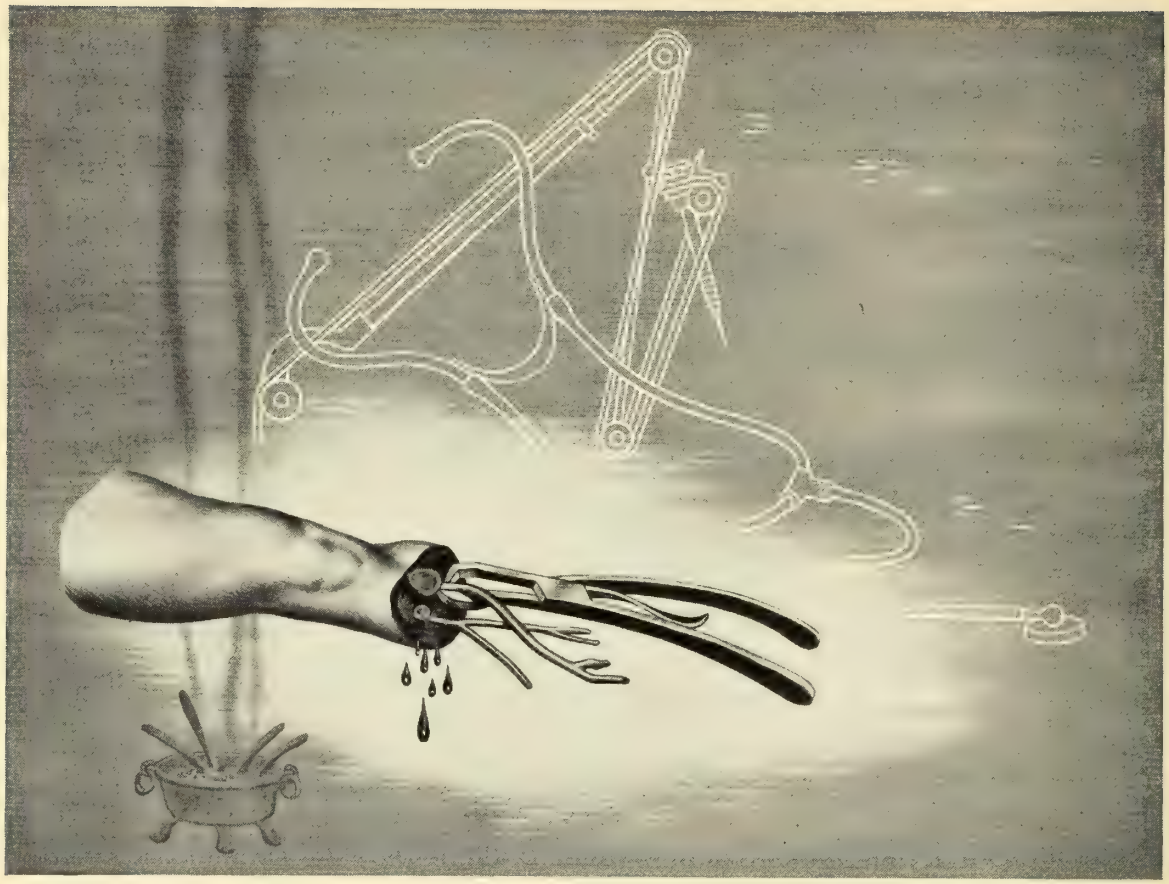
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Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60
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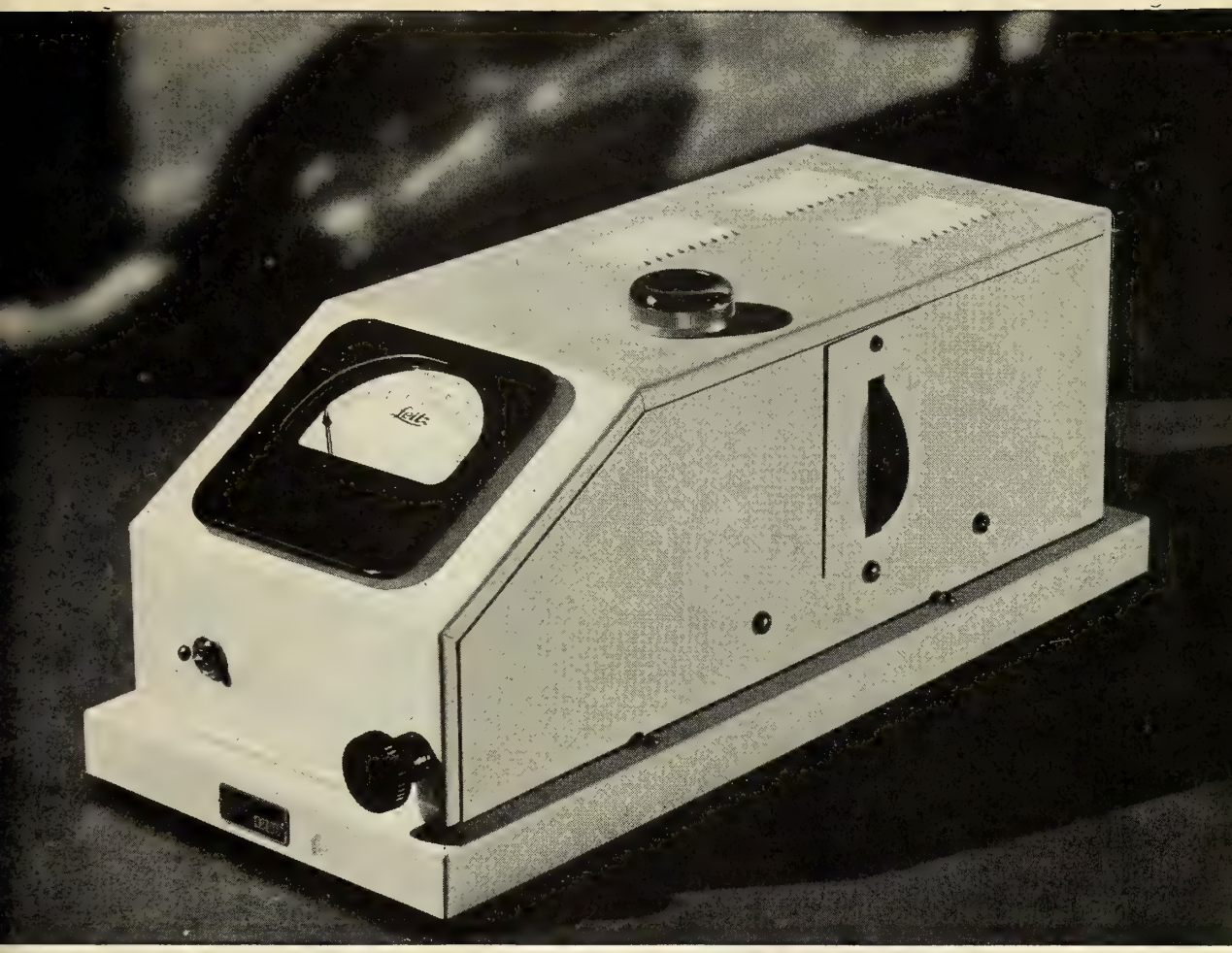
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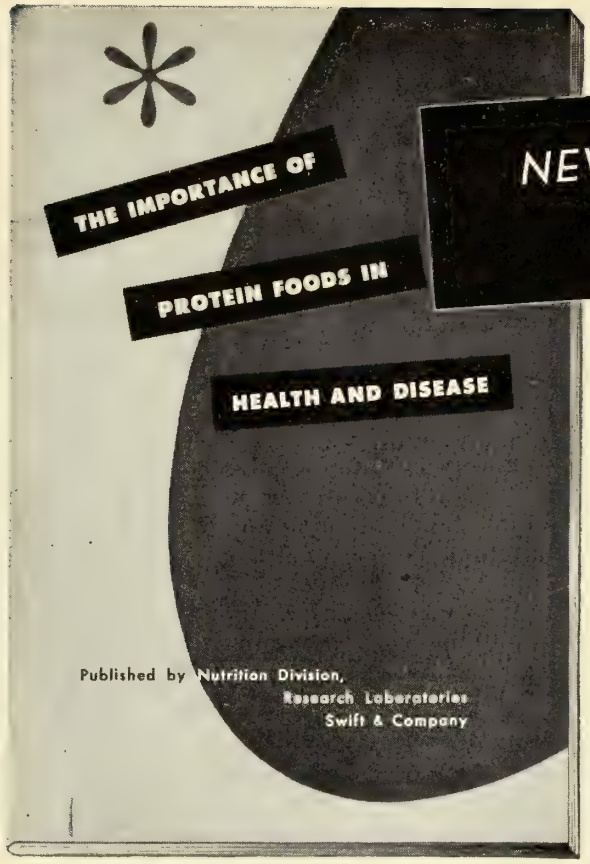
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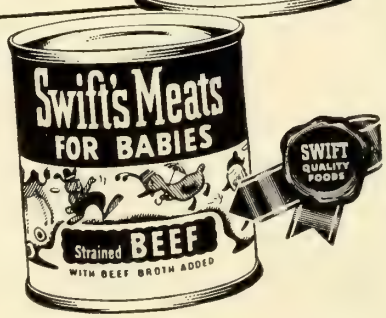
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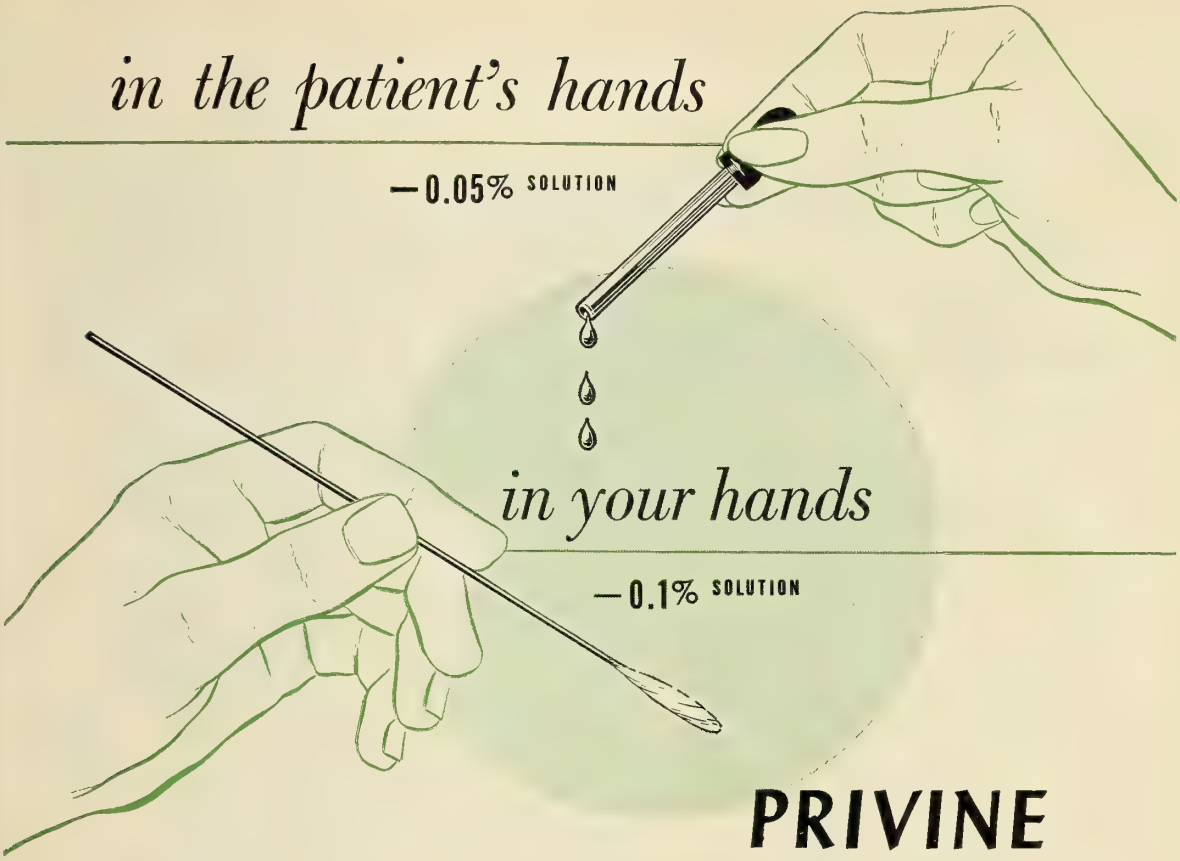
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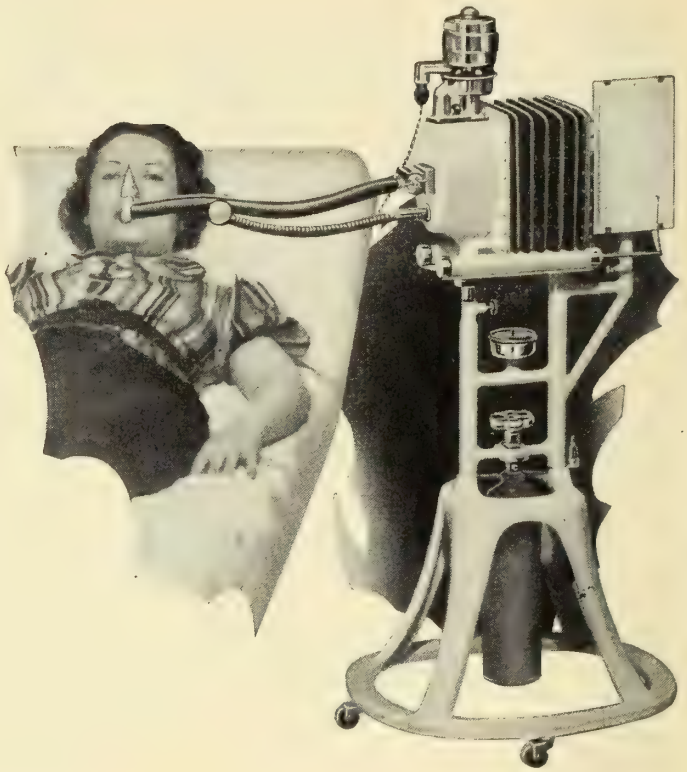
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Charles J. Marshall New York Journal of Medicine, Vol. 34, Aug. 15, 1934

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 February, 1948 No. 2

THE EARLY YEARS OF ANDREAS VESALIUS

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New Haven, Connecticut

Preliminary Remarks

I count it a special privilege to be invited to address the members of the Ramsey County Medical Society on the occasion of the fiftieth anniversary of its library, for I have an abiding interest in medical libraries and firmly believe in the importance of their potential contribution to the medical profession; not only this, but I have a particular familial interest in this library since in the early days my father was one of its more ardent advocates, and my uncle, Dr. Charles Wheaton, was also a staunch supporter. Thus if I were not interested in it myself, I should be guilty of filial disrespect.

Father, who was president of the Ramsey County Society in 1893 and of the State Association in 1897-98, had settled in Saint Paul in 1882, and there is one innovation which he introduced in the state of which my family have always been especially proud. In 1884 the dean of the Minnesota College Hospital announced that the professor of ophthalmology and otology would "give a free clinic on diseases of the eye and ear at the college building upon each Friday, and that all indigent afflicted are invited to avail themselves of the attention now for the first time in the history of our state offered them."* This, I believe, marked the beginning of dispensary service in Minnesota. Father always contended that he learned more about ophthalmology from his dispensary than he did from his office practice. As a result, he was at all times very insistent that young medical graduates should make a point of giving some part of their time to dispensary practice.

ANDREAS VESALIUS

SIR William Osler always maintained that no medical library could possibly afford to be without a copy of the great masterpiece of anatomy, the *Fabrica* of Andreas Vesalius published in 1543. So successful was his teaching that few libraries can now afford to have one, if they didn't acquire it before Osler's rapidly multiplying progeny of medical book collectors were turned loose upon an unsuspecting world.

There is just reason, however, for Osler's contention about the importance of the *Fabrica* since there are few parallels in history to the prodigious and precocious labors of the restless young Belgian whom the late Edward Streeter used to call "the redhaired man of wrath." Like his distinguished Roman predecessor, Galen, Vesalius was incredibly industrious, but he was also vain, short-tempered, and must have been anything but comfortable to live with. Indeed, he once said that anyone who would follow the medical profession must not take unto himself a wife.

Born at the turn of the year 1514-1515 of an English mother, Isabella Crabbe, and a pharmacist father (also named Andreas Vesalius), who was descended from a long line of physicians, Andreas the younger exhibited signs of precocity early in life, and it is recorded that before the age of ten he began to collect objects of natural history and to dissect rats and moles; later he devel-

Read at the fiftieth anniversary celebration of the Ramsey County Medical Society Library, Saint Paul, Minnesota, September 23, 1947.

*Northwestern Lancet, 3:183, (May 15) 1884. See also R. O. Beard's "The History of Medical Education in the State of Minnesota" in *The Unification of Medical Teaching in the State of Minnesota. An Historical Evening.* December 8, 1908 (Privately printed). 88 pp. (p. 27).

oped a similar passion for human dissections. On one occasion, when a student at Louvain, he smuggled through the gates of the city at night the skeleton of a robber who had been executed on a gibbet; and when he had articulated the completed skeleton in his rooms, he dared demonstrate it to his friends. But these activities soon were discovered and he was in consequence forced to flee Louvain.

This courageous searching for the truth in an age of superstition and slavish adherence to the past made him a marked man, and it must partially account for the fact that when only twenty-two years of age he was appointed professor of anatomy at the University of Padua. But before going to Padua he had first studied at Paris, where his crusading spirit led him almost at once into conflict with authority. Quoting the tag from Emerson that "Universities are hostile to genius," Edward Streeter adds that Emerson might have cited the University of Paris and Vesalius to prove his point. "For here was a genius who had articled with destiny to dedicate himself, his gifts, his splendid impatience to Reform; and here a University so encrusted and ankylosed with Conservatism that there was nothing quite like it in Europe at the time. What was Vesalius doing in that high, hushed Temple of Authority, that Depot of Bigotry, where studies in the schools had subserved the Faith for twelve generations and more? Did he hope at nineteen, by some open process, to supple the hard unintelligence that reigned in those schools, 'so great, so rich, so *rigid*' (as Rabelais describes them), where, if a scholar dares pronounce *quisquis* or *qualis* in other than the medieval manner he is like to be stripped of his dignities?"[6]

Vesalius had matriculated in medicine at Paris in 1533, and despite his brushes with the faculty he continued to work for the next three years, fulfilling the requirements for a doctoral degree. Had it not been for the threat of war between France and the Imperial forces of Charles V, to whom Vesalius and his family were closely tied, he would have taken his degree; but he returned to Louvain without it. His two masters, Jacobus Sylvius and Guenther von Andernach, were impatient with their doubting pupil, so much so that Sylvius, before Vesalius finally departed, became so enraged with him that he would probably have opposed the awarding of his degree. To quote Streeter once again in reference to these years in Paris:[6]

> The tough hearts of those who pioneer grow tougher under disappointments. Vesalius was galvanized into action. He plotted to end those traffickings with the seven types of lower animals which Galen allowed as substitutes, and to humanize the study-material at Trinquet. At the risk of his life he made forays to the gibbets of Montfauçon and the graves in the Cemetery of the Innocents.
>
> "I acknowledge no authority save the witness of my own eyes," said this champion of the *visum et repertum* method. "I want liberty to compare the dicta of Galen (Prince of Physicians!) with the tangible facts of bodily structure." He labored constantly to improve the technique of dissection; he tells how he thrust aside the bungling barbitonsors who, he says, "had made a mess of the eight muscles of the abdomen which they exposed in torn and sadly confused order" and how he carried on, layer by layer, dissections of the muscles, vessels, nerves, bones. Such skill with the knife had not been seen before in the city on the Seine. He performed the "Public Anatomy" of that year (and the next) single-handed and alone, *solito absolutius*. It was the third he had ever seen.

Vesalius had returned to Louvain in July, 1536, and after spending a year there, during which he presented his translation of the IXth book of Rhazes as a thesis for his doctor's degree (February, 1537), we lose track of him for some three months. He is next heard of in Padua where in December, 1537, he had been made a professor of surgery, which involved the responsibility of giving a public dissection. This he did with consummate success, and according to contemporary accounts, students traveled from great distances to see his public demonstrations.

The Tabulae Sex

We now come face to face with what Charles Singer refers to as the crux of the Vesalian problem. In a newly published monograph, entitled *A Prelude to Modern Science*, Singer and Rabin offer a minute study of the circumstances surrounding the publication of Vesalius' initial work issued at Venice on April 1, 1538, scarcely four months after he had reached Padua. During the past four hundred years, the six anatomical tables have been studied by eminent anatomists and historians and many distinguished artists, and even to Singer and Rabin they remain to some extent enigmatic. To Singer, Vesalius "opens a new scene as with the quick rise of a curtain, for it is essentially and brilliantly modern—modern in

appearance, modern in outlook, modern in method, modern in its art and in its technique. And modern, too, in what it omits no less than what it includes. It is a startling apparition in the very midst of that imitative world of the revival of classical learning which still pervades its language. To appreciate at all the magnificence of the great adventure of the *Fabrica* we must know something of its starting point—the starting point being the six anatomical tables."

The first three of the tables depict the portal circulation, the venous circulation, and the arterial, and together they represent an unoriginal résumé of Galenic anatomy. The heavy hand of tradition still lay upon the twenty-three-year-old Belgian anatomist. The vessels as delineated are inaccurate in many details, and they are more in line with the Galenic texts than with human anatomy as we now know it. Yet, as Singer eloquently points out, there had been nothing like them in technique of woodcut execution or in their attempt to provide medical students as well as anatomists with a visual image of the Galenic corpus.

It is probable that Vesalius himself drafted the original sketches on which the first three tables were based. Tables IV, V, and VI, on the other hand, were the work of Vesalius' colleague from the Low Countries, Jan van Calcar, and this is explicitly stated in the introductory comment to the first table: "I have sent these drawings themselves to the press," Vesalius writes. "To them we have annexed others comprising three representations of my skeleton which I have set up to the gratification of the students, rendered from three standard aspects by the distinguished contemporary artist, John Stephen [van Calcar]." Singer adds that the skeleton in question had been put together in January, 1538, for a public dissection at Padua, and that it must have come from the body of a youth aged about eighteen as is evidenced by the state of the epiphyses and sutures.

In the preface of the *Tabulae,* Vesalius mentions that he had a larger work in mind, and elsewhere (*Venesection Epistle,* 1539) he mentions that if he continues to have the services of his friend, John Stephen, he will get on with the work; but in 1543, when the great muscle plates of the *Fabrica* were to see the light of day, no mention is made of Calcar nor of any other artist who may have been associated with the undertaking. Singer and Rabin, without discussing the evidence pro and con, state categorically that it seems to them unlikely that any high proportion of the figures of the *Fabrica,* or the *Epitome* which also appeared in 1543, is by Calcar. As a working hypothesis they suggest that the artist of the *Fabrica* must have been "a young man, unknown to fame, who died before the book was printed." They add further: "It does not seem that they [the three skeletons of the *Tabulae*] are by the same hand that drew the three magnificent skeletons of the *Fabrica.* The jaunty gait of the fifth and the stiff lecture-room stance of the fourth are in strong contrast to the noble poses of the *Fabrica* skeletons. Nor does it need much anatomical analysis to see that many elements in the *Tabulae* skeletons are out of drawing. These conclusions seem to rule out the artist of the *Tabulae* as the artist of the *Fabrica.* When the *Tabulae* were published, Calcar was 39, an age that cannot be called formative for a draughtsman. It is difficult to believe that one who could work no better in line could develop at 44 into the great creative artist of the *Fabrica.* For this reason, among others, we do not believe that Calcar made most of the drawings for the later work."

The Singer-Rabin conclusions coincide with the general feeling of many scholars, but they are set forth in a dogmatic fashion and in the midst of a monograph heavily documented in other directions, but without the slightest indication of the basis of their sweeping deductions, beyond those actually stated in the quoted passages just given. Mr. William M. Ivins, Jr., formerly Curator of Prints at the Metropolitan Art Museum in New York City, has reached quite a different conclusion, namely, "that perhaps the more mature John Stephen, who paid the costs of printing and publishing the *Tabulae Sex,* was the real entrepreneur of the *Fabrica* and the *Epitome,* and that Vesalius' part . . . was merely that of a young medical man who was handy with his pen and who was engaged to write the commentary to accompany the drawings that John Stephen had made out of his long years of industrious investigation."[3]

This observation is challenging, for if Calcar, unaided, executed the plates and merely employed Vesalius as a hack writer, then the wandering artist of the Low Countries, who had had no formal training either in medicine or in dissection, must be proclaimed the founder of modern anatomy and experimental medicine.

Since the beginning of printing with movable

type, it has been customary for authors who wished to illustrate their books to seek professional assistance of draughtsmen, artists, woodcutters, engravers, and, more recently, of photographers. Anyone who has published a highly illustrated book in which the figures are drawn by an artist under the direction of the author fully realizes his debt to the artist, and there are many instances in which the excellence of the illustrative matter has been in large measure responsible for any success that the book enjoyed. The late Dr. Howard Kelly's monograph on the appendix and his textbook of operative gynecology have become collectors' pieces because of Max Brödel's remarkable drawings; but one could not claim that Brödel was the real entrepreneur of this classic. Similarly, in the eighteenth century William Hunter issued a memorable folio on the *Gravid Uterus*. The text, in this instance, was brief, but five or six of the best artists and engravers of the time were employed for the illustrations, and Hunter also had the wit to choose Baskerville as his printer, even as Vesalius had chosen his friend Oporinus. The Hunter plates have been profoundly admired, but here again the anatomist, not the artists, must be given primary credit for the princely folio.

Acknowledgment of indebtedness is usually made by the author to the artist and the engraver, but less frequently to the draughtsman who has been employed to make a linecut or diagram. In the fifteenth and sixteenth centuries it was not customary for an artist or an engraver to sign his illustrations, any more than it was common practice in the fifteenth century for a book to have a title page. Consequently, many of the finest early examples of the woodcutters', and later of the engravers', art have come down to us without indication of who executed them. If one examined illustrated works contemporary with the *Fabrica*, one would often find no indication of artist or engraver. It would thus appear that we can dismiss any deliberate attempt on the part of Vesalius to withhold credit from those who had assisted him.

In the second place it seems clear that it was Vesalius who first conceived the plan of preparing a human anatomy, and that he must therefore be allowed credit, not only for the originality of the idea, but also for his persistence in seeing the plan through. When we come to the *Fabrica*, the evidence of Calcar's participation, as Singer has implied, is less well established. Cushing, in a detailed discussion of Vesalius and Calcar in the introduction to his "Bio-bibliography,"[1] points out that in the *Venesection Epistle*, published somewhat over a year after the *Tabulae Sex*, Vesalius speaks in the preface of continuing his systematic studies and writes specifically: "We have now completed two plates of the nerves also: in the first the seven pairs of the brain are delineated; in the second the branches of the entire spinal cord are portrayed. I thought I ought to keep them till the time when I should undertake the plates of the muscles and all the inward parts. We have tried to make out a scheme of the dissections of this present year in the most convenient manner possible; but in view of the great crowd of spectators it proved altogether impossible to complete it."

There can be no doubt, however, that Calcar and his associates in Titian's studio did help materially with the drawings of the *Fabrica* as well as with those of the *Tabulae Sex*. The well-known collection of drawings originally belonging to Richard Mead, and transferred after his death to the Hunterian Museum at Glasgow, are almost certainly preliminary sketches made by Calcar for the *Fabrica*. That they were only preliminary is emphasized by Garrison[2] who draws attention to the fact that their outlines are obscure and much less accurate than those which eventually appeared in 1543. Indeed, they are precisely the type of preliminary sketch that any medical artist of the present day would submit to an author for correction and suggestion. The engraving of the bladder, for example, omits the openings of the ureters; these were subsequently introduced in the otherwise almost identical figure of the bladder which appeared in the *Fabrica*—an artist drawing such a lowly viscus could easily overlook these inconspicuous but physiologically important apertures.

But there is another and much more cogent reason for giving Vesalius primary credit, and that lies in the frontispiece of the *Fabrica* itself. Study of the preliminary *croquis* of the title page indicates that when the elaborate title was first drafted, and throughout the later stages of its development, there were two prominent figures, one, the central figure of Vesalius and the other the artist, notebook in hand, standing over Vesalius' shoulder sketching. The notebook, moreover, carries on its two covers the initials "S.C." [Steph-

en Calcar]. The earliest of the *croquis,* that at Stockholm, has the name "Jean Calkar 1675" written by a later hand. The Glasgow *croquis* was declared by Roth to be unquestionably the work of Calcar, and the important Crummer *croquis* is signed by the author in ink identical with that used for the drawing itself, *i.e., "Joh. Stephanus, inv. 1540 Venetiis."* The evidence that Calcar was responsible for the frontispiece is thus abundantly clear. If he had been the driving force responsible for the original dissections and Vesalius merely his convenient hack, would he have been so self-effacing as to place his ghost writer in the central position and himself in the background with his notebook? Since Calcar died two years after the appearance of the *Fabrica,* Vesalius, had he chosen to do so, could easily have blamed his artist for some of the errors that had to be corrected in the second edition. This he did not do in spite of the storm of abuse which the publication of his book had brought down on him.

One cannot leave the question of the authorship of the plates without considering Calcar's master. It has always seemed odd that Vesalius' contemporaries referred to the plates in the *Fabrica,* particularly those of the muscle men with the elaborate landscape in the background, as being the work of Titian, and that little claim was made for Calcar until the nineteenth century. May it not be that there is some basis for the earlier attribution? As just mentioned, it is well recognized that Calcar collaborated with Vesalius in the preparation of the *Tabulae Sex,* issued in 1538. But the extent to which Calcar or any other artist was involved in the larger undertaking of 1543 has nowhere been made clear and any claims for credit have always been based more on surmise than on documentary proof.

Quite recently, Dr. Erica Tietze-Conrat has disclosed an important contemporary reference to Titian's association with Vesalius, hidden away in the obscure *Diceria* of Annibale Caro.[7] In discussing "La statua della Foia, ovvero di Santa Nafissa," he makes reference to "La notomia del Vecelli," which unquestionably refers to the *Fabrica* of Vesalius. Although there is some uncertainty about the date of Caro's *Diceria,* internal evidence suggests that the passage in question was written in 1539; a later passage suggests 1543. Either date would be possible since Vesalius' association with Titian's studio began in 1538 (or possibly even in 1537), and the preface to his *Venesection Epistle* of 1539 indicates that in that year he was already planning the plates of the *Fabrica.* Caro spent several months in Venice in 1540, during which time he became intimate with Titian whom he met through his host, the poet Domenico Venier.

It is thus clear that Caro was in personal touch with Titian at the time the Vesalian plates were being designed, and the fact that so close a contemporary attributed them to Titian makes necessary a reconsideration of the part which Titian may have played along with his pupil Calcar in designing the plates. Miss Tietze-Conrat's conclusions seem highly relevant, and since her paper is published under a somewhat misleading title and would not ordinarily come to the attention of medical historians, it has seemed desirable to quote her argument in full:

> Caro's attribution to Titian does not represent a later tradition based on quality and substituting, as is always the case, a greater name for a lesser whose memory has faded; here, as a matter of fact, is no tradition at all, but an almost contemporary piece of information. How does this compare with the more precise and thrice repeated report by Vasari [in which he claimed authorship for Calcar]? Since Caro's observation proves that the attribution to Titian goes back to the sixteenth century, Vasari's remarkable emphasis on Calcar may have been meant as an intentional correction of what he considered an error. My personal opinion, however, is that Vasari might have wanted to throw light on the share in the woodcuts of his usually underrated "amicissimo Calcar." As a matter of fact, had attention not been drawn to Vasari's testimony, nobody would have questioned the attribution to Titian, since the postures and the proportions of the figures, and the landscape in which the figures are placed, are entirely in his style. They are so to such an extent that we are tempted to imagine that Calcar, whose portraits are very close to Titian's, was likewise dependent on Titian in his other paintings, none of which are preserved. Caro's early attribution of the *Anatomy* to Titian might be interpreted as evidence of a special sort of division of labor. When Vesalius wanted the illustrations made, he may have got into touch with Titian's studio. The assistant chosen for the task was probably Calcar, who, using either large nudes by Titian or, more likely, studies of poses made by him, transformed them into clear outlines which under Vesalius's supervision he filled with anatomical details. The latter alternative seems more attractive, since we are unable to imagine how such large nudes by Titian, none of which exist, may have looked. Calcar made a similar use of Titian's landscape sketches. According to my hypothesis then, the artistic invention of the figures, the *idea,* in the terminology of the period, and the *mise en scène* would be Titian's, while Calcar's would be that of the "medical designer," "il che gli

doverà in tutti i tempi essere d'Honore." This would correspond exactly to the division of labor typical of Raphael's studio and such an amount of participation by a pupil would also be compatible with any reasonable conception of Titian's workshop. The painstaking rendering of the minute results of the anatomical studies would contradict any notion that Titian himself was the medical designer.

Dr. Tietze-Conrat's deductions appear fair and reasonable, and when considered in association with evidence from Vesalius' own writings, which have been fully set forth by Cushing in his *Bio-bibliography of Vesalius,*[1] one might permissibly reconstruct their relations as follows:

The young Vesalius appeared at Padua and Venice in the summer of 1537. In December he received not only his M.D. but an appointment to a specially created chair of surgery, in connection with which he was obliged to give public dissections. By January, 1538, or possibly earlier, he must have fallen in with artists in Titian's studio, for by April 1 they had between them designed and published the *Tabulae Sex.* Within a few months of the appearance of the six tables, they were planning the larger work, and if Miss Tietze-Conrat is correct, Titian was consulted and began to direct the planning of the figures.

But whatever their contentions concerning the authorship of the *Fabrica,* historians of medicine will heartily agree with Mr. Ivins[4] on one point—that the reason why the *Fabrica* marked a turning point in the history both of medicine and art lies in the fact that for the first time a satisfactory synthesis had been reached between the work of the artist and the verbal descriptions of the physician-dissector. It was an achievement made possible by highly effective collaboration, and the imaginative direction of the undertaking came from Vesalius, rather than from his artist associates, however skillful and talented they may have been in assisting with the master plan.

The impact of the young Vesalius on medicine has been felt for four centuries and more—and his life achievement will ever serve as a stimulus and inspiration to those who practice the art of medicine.

* * *

Since it is in libraries that we preserve the record of the contributions of such men as Vesalius, I should like in closing to express one additional thought about physicians and medical libraries.

There are more than 2,000 county medical societies included within the continental United States and the Territory of Hawaii. About 10 per cent, or some 200, have attempted to maintain medical libraries, and I think you will find that the societies which have the foresight to support their own library are the ones responsible for medical progress, for the one unmistakable hallmark of the intellectual vigor of any group lies in its library, and by it one can unfailingly judge the intellectual and scientific preëminence of the men who have founded and supported it. If a group has the urge to support an institution such as this, and to command personnel of the quality of Miss Mary Post and Mrs. Eleanor Olson, and of Miss Isabelle Anderson who has so recently left you after seventeen years of devoted service, it becomes automatically a great force for progress in the profession. On behalf of another medical library which is only seven years of age, I bring sincere congratulations to your older institution on its fiftieth birthday—and I must add that the Historical Library at Yale takes inspiration from your example.

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A hospital would not think of failing to provide a patient with a routine urinalysis, and yet it is stated that only four-tenths of one per cent of cases of diabetes are discovered by such a routine procedure. The amount of significant tuberculosis discovered by providing a routine x-ray is much larger. It is also said that less than one per cent of patients provided a routine blood count have a blood dyscrasia. Less syphilis is found by providing routine Wassermanns than significant tuberculosis by providing a routine chest x-ray.—ALLEN FILEK, M.D., NTA Trans., 1947.

* * *

First tentative steps toward rehabilitation should be taken as soon as the patient's clinical status permits, and, the period of hospitalization should be used to the fullest extent for purposeful activities directed toward the final aim of physical, psychic and economic rehabilitation.—MAX PINNER, M.D., Editorial, American Review of Tuberculosis, (Aug.) 1947.

* * *

Preventive medicine requires not only the co-operation, consent, and understanding of the individual who is to be benefited; oftentimes he must take the initiative—he must realize that it is just as important to seek advice from his physician on how to keep well as it is to call upon the physician for help when illness strikes.—Medicine in the Changing Order, Rep. N. Y. Acad. Med. Comm., Commonwealth Fund, 1947.

THE ASSASSINATION AND GUNSHOT WOUND OF PRESIDENT ABRAHAM LINCOLN

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THE terribly tragic war between the states started by the firing on Fort Sumter in April, 1861, and ended when the brilliant, gallant, and noble Lee met the modest, silent, and imperturbable Grant under the apple tree at Appomattox, April 9, 1865. A report at that time stated "The whole country was clad in the garments of joy and every face wore an expression of gladness. The bells from Maine to California and from the Lakes to the Gulf pealed forth tones of exultation as better and still better news arrived." Great was the happiness and relief of the war-worn, sad-faced President. A crowd gathered before the White House and called for the President. A band serenaded, and then Lincoln appeared. He spoke a few words to the assembly and asked the band to play "Dixie."

General Grant came on to Washington and was the great hero of the day. The Cabinet met with President Lincoln. The city of Washington was surcharged with tenseness, joy and exultation, and withal much work. On Good Friday evening, April 14, 1865, Laura Keene, the great actress, was to appear at the Ford Theater in Washington in the play "Our American Cousin," a broad comedy. Mrs. Lincoln was desirous that the President and herself attend the theater with General and Mrs. Grant as their guests, but at the last moment General Grant had to go to New York and so Major Rathbone and his fiancée, Miss Clara Harris, accompanied the President and Mrs. Lincoln to the theater and occupied the State box with them.

The presidential party entered the box about 9:00 p.m. President Lincoln sat in a rocking chair near a door leading into the box through which the assassin entered. He was shot about 10:30 p.m. by John Wilkes Booth, a brother of the great actor and tragedian, Edwin Booth, and a handsome young actor himself, of whom it was said, "So bright, so gay, so kind, no young man had brighter prospects in life." The clearest account of what happened in the Ford Theater on this tragic night of April 14, 1865, that has come to my observation, is given by Dr. C. S. Taft, Assistant Surgeon, U. S. A., under the title "Last Hours of Abraham Lincoln," which I quote in full:

The following brief report of the circumstances attending the assassination, last hours, and autopsy of the late President, will doubtless prove of much interest to the profession, and may be relied upon as correct in all particulars, the notes from which it is written having been submitted to comparison with others taken, and corrected by the highest authority.

While sitting in an orchestra chair at Ford's Theatre, on Friday evening, the 14th inst., about 10:30 p.m., I heard the sharp report of a pistol in the direction of the State box, and turning my head in that direction, saw a wild looking man jump from the box to the stage, heard him shout *"Sic semper tyrannis"* as he brandished a glittering knife in his right hand for an instant, and dart across the stage from sight.

A few moments of utterly indescribable confusion followed, amid which I heard a call for a surgeon. I leaped upon the stage, and was instantly lifted by a dozen pairs of hands up to the President's box, a distance of twelve feet from the stage.

When I entered the box, the President was lying upon the floor, surrounded by his wailing wife and several gentlemen who had entered from the dress-circle. The respiration was inaudible and scarcely perceptible, and he was totally insensible. Ass't Surgeon Charles A. Leale, U.S.A., was in the box, and had caused the coat and vest to be cut off, in searching for the wound. The wound in the head was soon found, but at that time there was no oozing from it.

Several gentleman in the box were insisting upon having the President removed to his home, but Dr. Leale and myself protested against such a proceeding, and insisted upon his being carried to the nearest house. He was removed to a house opposite, and laid upon a bed in fifteen minutes from the time the shot was fired.

The wound was there examined, the finger being used as a probe, and the ball found to have passed beyond the reach of the finger into the brain. I put a teaspoonful of diluted brandy between the lips, which was swallowed with much difficulty; a half-teaspoonful, administered ten minutes afterward, was retained in the throat, without any effort being made to swallow it. The respiration now became labored; pulse 44, feeble, eyes entirely closed, the left pupil much contracted, the right widely dilated; total insensibility to light in both.

Surgeon-General Barnes and Robert K. Stone, M.D., the family physician, arrived and took charge of the case. At their suggestion, I administered a few drops of brandy to determine whether it could be swallowed, but as it was not, no further attempt was made. The

left upper eyelid was swollen and dark from effused blood; this was observed a few minutes after his removal from the theatre. About thirty minutes after he was placed upon the bed, discoloration from effusion began in the internal canthus of the right eye, which became rapidly discolored and swollen with great protrusion of the eye.

About 11:30 p.m., twitching of the facial muscles of the left side set in and continued some fifteen or twenty minutes, and the mouth was drawn slightly to the same side. Sinapisms over the entire anterior surface of the body were ordered, together with artificial heat to the extremities.

The wound began to ooze very soon after the patient was placed upon the bed, and continued to discharge blood and brain tissue until 5:30 a.m., when it ceased entirely; the head, in the meantime, being supported in such a position as to facilitate the discharge. The only surgical aid that could be rendered, consisted in maintaining the head in such a position as to facilitate the discharge of the wound, and in keeping the orifice free from coagulum.

Col. Crane, Surgeon, U.S.A., had charge of the head during a great part of the time, being relieved at intervals in this duty by myself. While the wound was discharging freely, the respiration was easy; but the moment the discharge was arrested for any cause, it became at once labored.

It was also remarkable to observe the great difference in the character of the pulse whenever the orifice of the wound was freed from coagulum, and discharged freely; thus relieving, in a measure, the compression. This fact will account for the fluctuations in the pulse, as given in the subjoined notes.

About 2 a.m. an ordinary silver probe was introduced into the wound by the Surgeon General. It met an obstruction about three inches from the external orifice, which was decided to be the plug of bone driven in from the skull and lodged in the track of the ball. The probe passed by this obstruction, but was too short to follow the track the whole length. A long Nelaton probe was then procured and passed into the track of the wound for a distance of two inches beyond the plug of bone, when the ball was distinctly felt; passing beyond this, the fragments of the orbital plate of the left orbit were felt. The ball made no mark upon the porcelain tip, and was afterwards found to be of exceedingly hard lead.

Some difference of opinion existed as to the exact position of the ball, but the autopsy confirmed the correctness of the diagnosis upon first exploration. No further attempt was made to explore the wound.

After the cessation of the bleeding from the wound, the respiration was stertorous up to the last breath, which was drawn at twenty-one minutes and fifty-five seconds past seven; the heart did not cease to beat until twenty-two minutes and ten seconds past seven. My hand was upon the heart, and my eye on the watch of the Surgeon-General, who was standing by my side, with his finger on the carotid.

The decubitus during the whole time was dorsal, and the position on the bed diagonal; the length of the bedstead not admitting of any other position.

The respiration during the last thirty minutes was characterized by occasional intermissions; no respiration being made for nearly a minute, but by a convulsive effort air would gain admission to the lungs, when regular, though stertorous, respiration would go on for some seconds, to be followed by another period of perfect repose.

At these times the death-like stillness and suspense were thrilling. The Cabinet ministers, and others surrounding the death-bed, watching, with suspended breath, the last feeble inspiration, and as the unbroken quiet would seem to prove that life had fled, turn their eyes to their watches; then as the struggling life within would force another fluttering respiration, heave deep sighs of relief, and fix their eyes once more upon the face of their dying chief.

The wonderful vitality exhibited by the late President, was one of the most interesting and remarkable circumstances connected with the case. It was the opinion of the surgeons in charge, that most patients would have died in two hours from the reception of such an injury, yet Mr. Lincoln lived from 10:30 p.m. until 7:22 a.m.

The following observations of the pulse and respiration were noted down by Dr. A. F. A. King, at the bed-side, and are correct. The pulse was counted by Acting Ass't Surgeon Ford.

10:55—48. 11:06—45. 11:18—42, and weaker. 11:24—42, respirations, 27 per minute, breathing quiet. 11:26—irregular, intermits occasionally. 11:30—45, resp. more frequent and vigorous. 11:32—45, stronger, resp. much more strong and stertorous. 11:37—48, resp. again silent and more feeble. 11:40—45. 11:43—45, resp. stertorous. 11:47—45, resp. 24, stertorous. 11:56—48, weaker. 12:10—48, irregularly intermittent. 12:18—48, same character. 12:27—54. 12:28—60. 12:29—66, intermittent. 12:38—66. 12:45—69, intermittent. 12:49—84, resp. 28. 12:56—66. 1:00—100. 1:15—92. 1:30—95. 2:10—60, resp. 34. 2:19—58. 2:32—54. 2:37—48. 2:54—48, much weaker, more thready, respirations feeble. 4:18—60, resp. 27, strong and stertorous. 5:40—64, thready, resp. 27. 6:10—60, hardly perceptible (Barnes), resp. 26, stertorous. 6:25—thready, not counted; resp. 22; inspirations jerking. 6:40—inspirations short and feeble; expirations prolonged and groaning; a deep, softly sonorous, cooing sound at the end of each expiration, audible to bystanders. 6:45—respiration uneasy, choking and grunting; lower jaw relaxed; mouth open; a minute without a breath; face getting dark. 6:59—breathes again a little more at intervals; another long pause. 7:00—still breathing at long pauses. 7:20—died.

About 1:00 a.m., spasmodic contractions of the muscles came on, causing pronation of the forearms; the pectoral muscles seemed to be fixed, the breath was held during the spasm, and a sudden and forcible expiration immediately succeeded it.

At about the same time both pupils became widely dilated, and remained so until death.

During the night Drs. Hall, May, Liebermann, and nearly all the leading men of the profession in the city, tendered their services

Autopsy; Five Hours After Death

Present: Surgeon-General Barnes, Col. Crane, Dr. Stone, Ass't Surg. Woodward, U.S.A., Ass't Surg. Curtis, U.S.A., Ass't Surg. Notson, U.S.A., and Act'g Ass't Surg. Taft, U.S.A.

The calvaria was removed, the brain exposed, and sliced down to the track of the ball, which was plainly indicated by a line of coagulated blood, extending from the external wound in the occipital bone, obliquely across from the left to right through the brain to the anterior lobe of the cerebrum, immediately behind the right orbit. The surface of the right hemisphere was covered with coagulated blood. After removing the brain from the cranium, the ball dropped from its lodgment in the anterior lobe. A small piece of the ball evidently cut off in its passage through the occipital bone, was previously taken out of the track of the ball, about four inches from the external wound. The hole made through the occipital bone was as cleanly cut as if done with a punch.

The point of entrance was one inch to the left of the longitudinal sinus, and opening into the lateral sinus. The ball was flattened, convex on both sides, and evidently moulded by hand in a Derringer pistol mold, as indicated by the ridged surface left by the nippers in clipping off the neck.

The orbital plates of both orbits were the seats of comminuted fracture, the fragments being forced inward, and the dura-mater covering them remaining uninjured. The double fracture was decided to have been caused by contre coup. The plug of bone driven in from the occipital bone, was found in the track of the ball, about three inches from the external wound, proving the correctness of the opinion advanced by the Surgeon-General and Dr. Stone as to its nature, at the exploration of the wound before death.

The ball and fragments, together with the fragments of the orbital plates and plug from the occipital bone, were placed in the possession of Dr. Stone, the family physician, who marked and delivered them, persuant to instructions, to the Secretary of State, who sealed them up with his private seal. The Nelaton probe used was also marked by me, and sealed up in like manner.

Present in the room at Lincoln's death were Mrs. Lincoln; their son, Robert Lincoln; many members of the Cabinet; the doctors, including Surgeon General Barnes and Dr. Taft of the Army, and Dr. Robert K. Stone, Lincoln's family physician; the Rev. Thomas Gurly; and generals of the Army. As Lincoln died, Stanton, the great Secretary of War, uttered these historic and prophetic words: "Now he belongs to the ages."

General Grant's train en route to New York was stopped at Philadelphia, and the General was notified of President Lincoln's assassination and ordered back to Washington.

Major Rathbone is said to have first noticed the assassin of President Lincoln and grappled with him, but he was cut and slashed by a knife or dagger that Booth was carrying, and Booth escaped. Booth left the stage waving the dagger and shouting, *"Sic semper tyrannis"* (so be it always to tyrants) which appears on the seal of the State of Virginia.

Someone, comparing Lincoln to Duncan in Shakespeare's tragedy, quoted these lines, substituting the word Lincoln for Duncan: "Lincoln is in his grave; after life's fitful fever he sleeps well. Treason has done his worst, not steel nor poison, malice domestic or foreign, nothing can touch him further. This Lincoln hath done, his faculties so meek, hath been so clear in his great office that his virtues will plead, like angel's trumpet tongue against the deep damnation of his taking off."

A tragic fate awaited the five who entered the Presidential box that night. The President was assassinated, Mary Todd Lincoln, the President's wife, was ever after unhappy and became mentally ill. John Wilkes Booth, the assassin, in jumping from the President's box to the stage, caught his spur in the American flag which draped the box, and fell, fracturing a bone in his leg. Later he was shot to death by a soldier, Peter Corbett, while attempting to escape from a burning barn near Port Tobacco, Virginia. Miss Clara Harris who accompanied Major Rathbone to the theater was later murdered by him. Major Rathbone himself became a raving maniac.

In present times, President Lincoln would have been taken promptly to a modern hospital in an easy-riding modern ambulance over smooth pavement, but the doctors then felt it would be dangerous to move him in a horse-drawn vehicle over cobblestones, and so decided to carry him across the street to a small modest home, which they did, taking about fifteen minutes to get him into bed. In spite of modern means of transporting the injured, and the wonderful progress in brain surgery and medical treatment of brain injuries, I think it is the opinion of most surgeons who have studied the gunshot wound of President Lincoln, as shown by the recorded findings of the surgeons and the postmortem report of injury to the base of the brain and region of the pons, that the treatment today would be supportive and expectant observation. The subdural clots of blood might have been removed by surgery, but the

(Continued on Page 156)

RECURRENT DISLOCATIONS OF THE SHOULDER

Experiences with the Transplantation of the Subscapularis Tendon

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THE treatment of recurrent dislocations of the shoulder is a perplexing problem. There is a note of encouragement, however, if one carefully studies the evolution of the operative procedures which have been developed since the turn of the century. It has been estimated that somewhat over sixty operative procedures have been described for the correction of this malady. Every operation which has been devised is based upon the use of one or more of the following principles: (1) reconstruction,[1,2,6,16,26] (2) supportive grafts,[3,4,7,9,10,11,13,23,26] (3 tendon transplants,[4,12,14,17,18,19,22,24,25,26] (4) muscle transplants.[5] The author's choice for the correction of recurrent dislocations of the shoulder is based upon the principles described by Magnuson and Stack.[18] Its merits will serve as the basis for this presentation. The operative technique, the postoperative management, and the reasons for choosing this procedure are set forth in the paragraphs to follow.

Operative Technique

The entire extremity and shoulder are surgically prepared in the usual manner. The former is covered with sterile stockinette and this is secured to the drapes so as to allow complete freedom of motion of the entire extremity without interfering with the remainder of the drapes. An anterior approach is utilized by making an incision 3.5 to 4 inches long, parallel to and over the bicipital groove. The delto-pectoral groove is identified to make certain of the location of the cephalic vein in order to avoid injuring it. The deltoid fibers are then separated by blunt dissection, starting at a point about 1 to 1.5 inches lateral to the delto-pectoral groove. The dissection is carried down to the rotator cuff. The subdeltoid fascia is retracted. Extreme care should be exercised to avoid injury to the circumflex branches of the axillary nerve which supply the anterior portion of the deltoid.

After the rotator cuff has been well exposed, the arm is rotated externally, and the inferior margin and also the width of the attachment of the subscapularis tendon are identified. The bicipital groove is located, for this serves as a future landmark (Figs. 1, a and b). With the arm

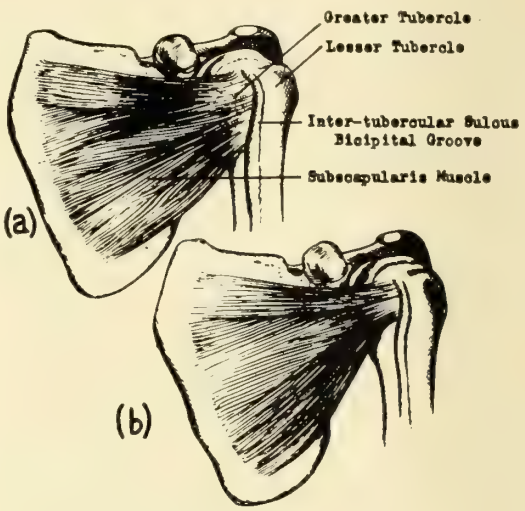


Fig. 1. Insertion of subscapularis tendon, (a) with wide attachment, (b) with narrow attachment. Identifying landmarks are also shown.

in external rotation, a small, slightly curved, periosteal elevator or a curved hemostat is introduced beneath the subscapularis tendon and directed upwards and parallel to the shaft of the humerus (Fig. 2a). The point of this instrument is brought out through an opening in the tendon or the rotator cuff (for narrow attachment). The tendon is incised down to the periosteum at the most distal part of its insertion (Fig. 2a). This incision starts at the level where the instrument protrudes through the opening in the tendon or rotator cuff and extends down as far as the inferior margin of the tendon. The insertion of the tendon, with its osseous attachments, is separated by means of a gouge. If the tendon is of an average width, approximately three-fourths is separated (Fig. 3). If it is quite narrow, the entire insertion should be detached (Fig. 2b). The detached portion is mobilized by cutting the fibers in the parallel axis for a distance of 1.5 to 2 inches (Fig. 3). At this point it is well to insert two traction sutures (Figs. 2b and 3) through the

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severed tendon in order to prevent retraction when the arm is internally rotated during the next step of the operation.

into the substance of the joint capsule along its antero-inferior margin. This suture is tagged and used later (Figs. 2b and 3). Two small drill

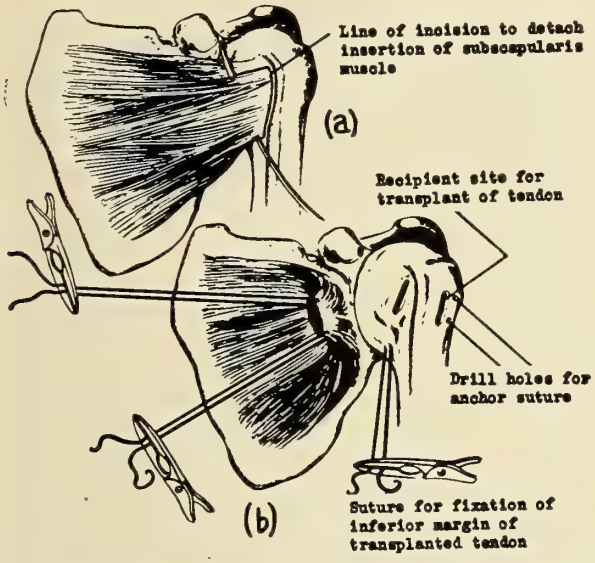


Fig. 2. (a) Elevator introduced beneath supscapularis tendon of average width. (b) with a narrow attachment, the entire insertion is detached.

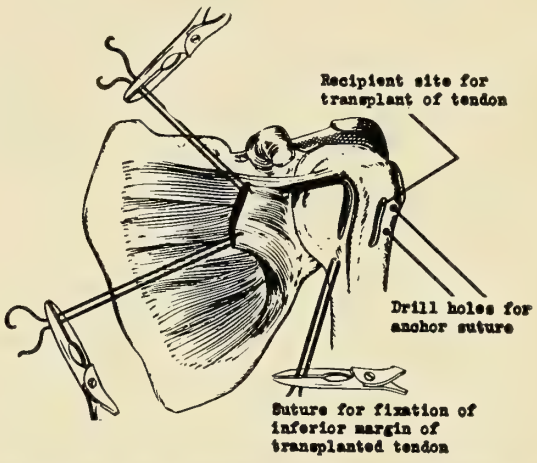


Fig. 3. With an average or wide attachment, about three-fourths of the tendon insertion is separated.

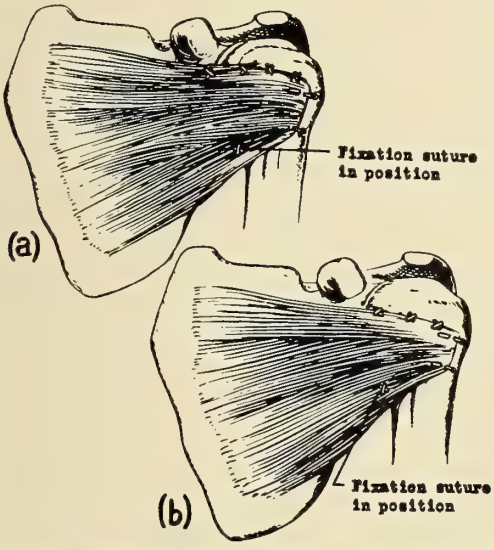


Fig. 4. Appearance of the transplant when completed, (a) with a wide tendon attachment, (b) with a narrow attachment.

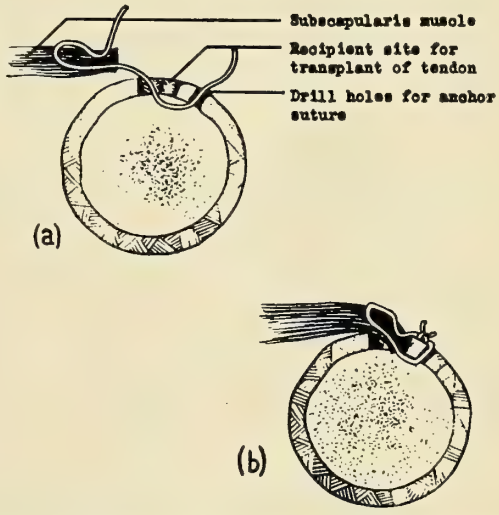


Fig. 5. (a) Placing of anchor suture. (b) Anchor suture completed.

In the next step, a portion of the cortex of the humerus is removed at a point lateral to the bicipital groove and at a level slightly lower and more distal than that of the original attachment (Figs. 2b and 3). This is the recipient site and should be about one centimeter more distal or lower on the shaft of the humerus than the donor site. At this time it is well to anchor one suture

holes are made through the cortex of the humerus, lateral to and communicating with the recipient site (Figs. 2b, 3 and 5a). Individual sutures of double strand chromic catgut are passed through each of the drill holes (Fig. 5a). These two sutures are used as anchor sutures for the tendon when it is transplanted. After the transplant has been completed, the upper edges of the cut ten-

don are firmly sutured to the rotator cuff by means of interrupted sutures of catgut (Fig. 4, a and b). The suture which was previously tagged is now brought through the substance of the inferior margin of the transplanted tendon and securely tied (Fig. 4, a and b). This serves to increase the sling effect of the transplanted tendon.[18] The incision is closed in the usual manner. The extremity is immobilized by means of a sling, adequately secured to prevent abduction and external rotation.

Postoperative Management

The patient is allowed out of bed as soon as he has recovered from the effects of the anesthetic. The arm is kept immobilized in a sling adequately secured to prevent abduction and external rotation. This immobilization is continued for a period of four weeks. Following this, active motion, muscle development of the rotator cuff, especially the internal rotator group, and physiotherapy, in the form of heat and massage, is instituted. At the end of six to eight weeks most patients are able to abduct the arm to 90 degrees and have recovered approximately 75 per cent of their external rotation. *Forceful* abduction and external rotation are not encouraged beyond the point of discomfort until a period of four months has passed.

Preferential Reasons

1. This is a surgical approach which is not encumbered by vital structures.

2. No secondary incisions are necessary to obtain supportive grafts of bone, fascia, or tendon.

3. There are no complications or disability such as occasionally result at the donor site following the removal of fascia lata, bone, or tendon.

4. The operation is based on sound physiological and mechanical principles. The sling formed by the transplanted tendon makes an excellent support to maintain the head of the humerus in the glenoid and at the same time interferes very little, if at all, with the function of the subscapularis muscle.

Thirty-four patients were treated by this operative procedure. A complete and satisfactory follow-up is not available because many of them were operated upon at Guam. Of those who were carefully followed for periods ranging from fifteen to eighteen months, the results were excellent. Several additional patients were heard from six months after surgery but these had not as yet regained a full range of motion.

Discussion

In view of the fact that primary dislocations often produce a traumatic functional disability of the subscapularis muscle[20] as well as stub fractures,[20] avulsion of the glenoid labrum,[1,2,20] and a posttraumatic bursitis beneath the inferior margin of the rotator cuff,[20] it is not difficult to visualize why transplantation of the subscapularis tendon is effective in producing a cure in cases where the dislocation has become habitual.[17,18] A simple capsulorrhaphy[16] in the presence of a wide tendon, no doubt, will produce a fair percentage of good end results. Surgical trauma[26] of a sufficient degree to cause formation of adequate scar tissue which is capable of setting up a barrier for the gliding humeral head is in itself effective in a small number of cases. The operation in which a bone peg,[3,7,23] is inserted into the anteroinferior margin of the glenoid is designed to work on the barrier principle. It is also conceivable that the Bankart operation[1,2] and modifications[6] thereof achieve some of the good end results from the same principle. The suspension operations[4,5,9,10,11,12,14,19,22] are not based on this idea and therefore depend entirely upon the support given by the transferred tendon or fascia.

It is my opinion that dislocations which occur following any corrective operative procedure for recurrent dislocation of the shoulder can be largely attributed to improper postoperative management. I have had occasion to observe a number of such incidents, and in every instance the surgeon's enthusiasm failed to take into account the slow rate of nature's reparative processes. In every case, activity was forced or encouraged so that the patient would have a considerable range of motion at the end of three weeks following operation.

I believe it is imperative that adequate immobilization should be instituted and maintained throughout a period sufficiently long to allow nature's healing processes to achieve a desired maximum. This should be followed by physiotherapy designed to re-establish the muscle co-ordination of the rotator cuff. Special attention should be directed to rehabilitate the power of internal rotation. Power for this motion can be achieved by

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THE SURGICAL TREATMENT OF ANEURYSM OF THE ABDOMINAL AORTA

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THE following case of aneurysm of the abdominal aorta is reported because of (1) the long history before treatment was instituted, (2) the long survival after first operative treatment, and (3) the two different surgical approaches to treatment.

Comprehensive reviews of the subject of aneurysms of the abdominal aorta have been given by Matas, Bigger, Elkin, and DeTakats and Reynolds. Suffice it to say, that over 500 cases have been reported in the literature, of which thirty have had surgical treatment. From Bigger's statistics, about 80 per cent of patients suffering from abdominal aneurysms die in less than one year after onset of symptoms* DeTakats, in a review of the literature, found instances of only six patients who survived operation for more than one year; to this series he added two cases of his own.

The operative treatment of aneurysm of the abdominal aorta consists of wiring, coagulation, the application of the Matas principle of endoaneurysmorrhaphy or ligation by means of fascia lata strips, metal bands, cotton tapes or cellophane. It is to be remembered that except for excision of the aneurysm any other treatment is palliative. To date there has not been a successful excision of a true aortic aneurysm, chiefly because of the failure of a collateral circulation to develop. This is in contradistinction to an arteriovenous fistula or coarctation of the aorta in which a good collateral circulation is usually present. Partial occlusion with metal bands or with silk or wire is usually unsuccessful because of the danger of rupture of the vessel at the point of ligation. Bands of fascia or tape frequently give way and allow the channel to reopen.

From the experimental work of Page and Pearce, the use of a cellophane wrap to produce a gradual fibrotic compression of the aorta was suggested. In 1939, Page wrapped the kidneys of dogs in cellophane to produce hypertension. A marked tissue reaction was said to have occurred within three to five days following the application of "ordinary" cellophane. Within two weeks, a dense fibroblastic and collagenous deposit developed over the surface of the kidney, forming a constricting hull from 3 to 5 mm. in thickness. The hull continued to thicken for an undetermined period of time despite the disappearance of the cellophane. A foreign body reaction was said to have been produced by all of the varieties of cellophane used, although the moisture-proof types appeared less reliable than the others.

Harrison and Chandy wrapped cellophane proximally and distally to subclavian aneurysms in two Arabs. One of these was successful, the complete occlusion taking nineteen months. They suggested the use of this substance for the gradual occlusion in aneurysms of the aorta. DeTakats and Reynolds treated three cases of aneurysm of the abdominal aorta with eighty-ply cellophane; the patients were living up to fourteen months after operation.

Poppe and DeOliveira concluded from their experiments on dogs that Dupont 1.5 mil. polythene cellophane seemed to offer the most successful method of gradual fibrosis and obliteration of aneurysms and large vessels. The polythene cellophane which they used caused a pronounced fibrous reaction around the aorta in experimental animals. They used the same material on four humans, but without sufficiently long follow-up to report results. Osler Abbott has reported the use of polythene cellophane in the treatment of aneurysm of the thoracic aorta, its branches and of the pulmonary artery.

In direct contradistinction to the above work, other investigators consider cellophane as a physiologically inert substance. In 1936 Donati was the first to demonstrate this inert property of cellophane. Using regular commercial cellophane, 0.02 mm. in thickness to prevent adhesions between the brain and skull, he found the cellophane to be close to the brain after thirty-five days, with no irritative reaction surrounding it. McKeever studied the effect of cellophane (300 PUT and

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*This statement applies more to syphilitic aneurysm than to those on an arteriosclerotic basis. Dr. John Lepak, of Saint Paul, informs me that one of his patients had an arteriosclerotic aneurysm of the abdominal aorta for thirty-five years, the walls of which later became calcified. Dr. C. N. Hensel, of St. Paul, has had a patient who survived at least twelve years after the diagnosis of arteriosclerotic aneurysm of the abdominal aneurysm was made. The fact that patients with arteriosclerotic aneurysm may survive a long time without treatment should be taken into consideration in advising surgical therapy.

71) in the treatment of arthritis, and found no reaction caused by the cellophane for at least two months after operation. Similarly, Wheeldon, using 300 moisture-proof cellophane as the lining of the joint in arthroplasty, found no irritation of the tissues. Ingraham, Alexander and Matson state that animal experimentation with the synthetic plastic material, polyethylene, in the form of flexible tubing and film has shown it to be well tolerated in animal tissues when used in pure form. There is no foreign body reaction, the tissue response being similar to that seen in the use of tantalum and methyl methacrylate. These authors insist that the polythene be pure, for in their experiments on cats, in replacing the dura with polythene, the impure material caused hematomata which were gradually absorbed and replaced by scar tissue. Brown, Grindlay, and Craig found that polythene was inert and could be used in the reconstruction of common ducts, the trachea, colon, et cetera.

In considering the above divergent views it is apparent that varieties of cellophane act differently in causing tissue reaction and that the same type of cellophane acts differently, depending on whether it is in a pure or impure state. It may be questioned how much tissue reaction is nonspecific foreign body reaction dependent upon surgical trauma, sutures, et cetera, rather than due to cellophane. Also, the time element may be important. Cellophane which may cause no tissue reaction in short-term experiments may cause fibrosis over a long period of time. These questions await further experimental study.

It should be mentioned that the cellophane in this country is manufactured by E. I. duPont de Nemours and Company, Incorporated, of Wilmington, Delaware. Polythene in bulk is furnished to manufacturers by this company. According to Mr. C. L. Blair, of the Technical Service of the duPont Company, plasticizer or any anti-oxidant material is not used in their make of polythene. There is incorporated in their polythene sheets less than 1 per cent of an ester-like material as an essential item in the manufacturing process. The nature of this ingredient is considered confidential to their process and cannot be revealed. Mr. Blair kindly furnished the polythene used in this reported case, which is the same type of material supplied to Dr. J. Karl Poppe.

The circumstances under which such occlusion of the abdominal aorta may be considered justifiable are as follows: (1) the patient should not be a poor risk, (2) there should not be extensive diffuse calcification of the aorta, and (3) the aneurysm should arise from the aorta distal to the renal arteries.

The following case is of interest because the patient had had a palpable aneurysm of the abdominal aorta for eight years before surgical treatment and he was living four years after a fascial taping proximal to the aneurysm. When he was operated upon again, a cellophane wrapping was applied to the proximal end of the aneurysm and another "patch" applied to the superior anterior surface of the aneurysm. The patient survived five months, when he died of a coronary occlusion. An autopsy was obtained.

Case Report

Mr. M. W., aged fifty-six, was admitted to St. Joseph's Hospital, Saint Paul, Minnesota, on April 20, 1947. He gave the following history:

In 1930 he was under the care of Dr. C. S. Raadquist at Hibbing, Minnesota, because of indefinite abdominal distress, which cleared up with diet. Also, he had pain in the back of the neck, which ran up into the occipital region.

In 1932 he was again seen by Dr. Raadquist and Dr. C. N. Harris of the Adams Clinic, because of a burning sensation starting in the pit of the stomach and radiating to the chest over the sternum. It was also present in both shoulders and down the arms to the hands. Eating aggravated the sensation and milk made it worse. He complained of much bloating, and when gas did form, the pain was worse.

In 1935 he had a similar attack, and at this time a diagnosis of coronary disease was made. At this time there was a small mass in the abdomen in the midline, which was pulsating. Gastrointestinal study showed diverticula of the colon. The mass in the abdomen was 4 by 5 cm. in diameter. A diagnosis of aneurysm of the abdominal aorta was made, which was confirmed by Dr. E. L. Tuohy of the Duluth Clinic. Blood pressure at that time was 106/70. An electrocardiogram showed a recent coronary occlusion involving the posterior descending branch of the right coronary artery.

In November, 1942, he had a check-up at the Duluth Clinic because of another coronary attack. The abdominal mass at that time measured 9 by 12 cm.

On May 20, 1943, the patient was seen at the Mayo Clinic where he was operated upon by Dr. J. de J. Pemberton for aneurysm of the lower abdominal aorta. According to Dr. Pemberton, at operation the aneurysm was about 10-12 cm. in size and was situated behind the mesentery of the small bowel. It began just at the terminal end of the aorta before it divided into the common iliac. A piece of fascia, 0.75 inch thick, was taken from the right thigh and wrapped around the aorta twice, producing partial constriction of the aorta just proximal to the aneurysm. Dr. Pemberton estimated that the proce-

dure reduced the amount of blood through the aneurysm about 80 per cent. The patient left the Mayo Clinic June 9, 1943. The danger of rupture was explained and he was told to limit his activities.

In September, 1943, he was seen, at which time he had a pulsating mass 13 by 15 cm., the larger diameter being transverse. It showed 5 cm. above and 8 cm. below the umbilicus. Blood pressure was 112/68. He complained of epigastric distress, which was thought to be of coronary origin.

In October, 1944, he was again seen, when he complained of pain in the back. The mass in the abdomen was getting larger.

The patient was seen at the present admission in February, 1947. The patient complained of numbness and tingling of the toes. The mass in the abdomen also bothered him, and he wished something done, because he was "afraid that it might rupture." He was admitted to St. Joseph's Hospital April 4, 1947. Physical examination revealed a mass in the abdomen which measured 13 by 18 cm. It was situated below the umbilicus, was smooth, oblong, not tender to palpation. Blood pressure was 120/60. Examination of the blood and urine were essentially negative. Wassermann and Kline tests were negative. His heart showed left ventricular hypertrophy. The patient was operated upon on April 21, 1947, under cyclopropane anesthesia, through a right lower paramedian incision. The aneurysm was adherent to the anterior abdominal wall. The dissection was carried medially and the aneurysm was finally freed from the anterior abdominal wall. The retroperitoneal duodenum was lifted up and the root of the aorta visualized. There was no evidence at this time of the fascia lata strip. The aorta was atheromatous, especially on the anterior superior aspect of the aneurysm. Because of adhesions, the lower end of the aneurysm could not be definitely felt, but it certainly was down to the bifurcation of the aorta. A piece of polythene cellophane, 1 inch in width, was placed around the upper end of the aneurysm, and also another strip, about 2.5 by 3.5 inches, was placed over an atheromatous plaque on the anterior superior portion of the aneurysm. These were held in place by interrupted 0000 silk. The abdominal layers were closed with interrupted 000 silk. At the time of operation, a small piece of cellophane was placed subcutaneously, lateral to the incision in order to determine how much fibrosis might occur.†

The patient made an uneventful convalescence. He reported that the numbness and tingling of his toes had disappeared after operation and his feet felt warmer. It is a question whether the freeing of the aneurysm from the anterior abdominal wall had anything to do with it. The patient was discharged from the hospital on February 27, 1947. He was seen on June 11, 1947, at which time he felt well, the wound was well healed and the aneurysm measured 10 by 15 cm. Also, there seemed to be less pulsation in the aneurysm. The amount of fibrosis about the piece of cellophane placed subcutaneously and laterally to the incision was not remarkable at this time.

The patient wrote in July and August, 1947, that he felt well and was coming for a checkup, when, on September 16, 1947, he died suddenly from coronary occlusion. An autopsy was performed by Dr. G. Berdez, pathologist at St. Mary's Hospital, Duluth, Minnesota. The pertinent findings were as follows:

The heart weighed 530 grams. The cavities of the heart were markedly dilated, mainly the left ventricle, and there was an "aneurysm" of the lower half of the anterior wall of the left ventricle measuring 7 by 5 cm. and containing some mural thrombi. In that region the wall of the left ventricle was very much thinned out, formed by scar tissue, and measured down to .2 cm. in thickness. The cusps of the aortic valve were somewhat thickened and fibrous, and showed small areas of calcification. The other valves showed nothing of note. The foramen ovale was closed. The entrance to the coronary arteries was markedly narrowed. The coronary arteries showed arteriosclerotic changes, grade III, and were quite narrow. The anterior descending branch of the left coronary artery showed a marked calcification and was obliterated. The circumflex branch was almost obliterated and also showed some calcification. The right coronary artery was quite narrow. The aorta showed marked arteriosclerotic changes. There was a large aneurysm of the lower part of the abdominal aorta, just above the bifurcation. After filling this aneurysm with water, it measured 14 cm. in length, 10.5 cm. in width, and up to 8 cm. in thickness. Upon opening the aneurysm, the internal surface of the sac was somewhat irregular; large masses of thrombus material were attached to the internal surface. The wall of the sac (anterior wall) measured from .2 to .5 cm. in thickness and was quite fibrous; the wall was thickest in the upper anterior surface. The common iliac arteries, anterior to their bifurcation into the internal and external iliac arteries, showed also a marked and diffuse dilatation and measured up to 4 cm. in diameter; upon opening those vessels, there were masses of thrombus material which were still attached to their internal surface. The aorta showed marked arteriosclerotic changes which involved the arch of the aorta, the thoracic and the abdominal aorta; the changes were more marked in the lower part of the thoracic aorta and in the abdominal aorta. The intima showed numerous prominent yellowish patches, some of them breaking down; the edges of the defect were sometimes slightly undermined, and the degenerative changes extended to the media. The aneurysm of the lower abdominal aorta started about 1 cm. below the place where the renal arteries left the aorta; just above the renal arteries, the internal circumference of the aorta measured 5.5 cm. in length; the upper opening of the aneurysmal sac measured about 4.3 cm. in circumference. Between this upper opening of the aneurysmal sac and the place from where the renal arteries left the aorta, there was a segment measuring 1 cm. in length which was dilated also. Between that dilated segment and the upper opening of the sac, there was a ridge which was slightly prominent in the lumen of the aorta. At that place, the connective tissue surrounding the aorta was more fibrous. Rests of a cellophane band which had been placed around the neck of the aneurysm could not be recognized grossly.

†Unfortunately, this area was not studied at autopsy.

Anatomic diagnosis:

1. Coronary sclerosis, grade III
2. "Aneurysm" of the anterior wall of the left ventricle.
3. Arteriosclerosis, grade III, of the aorta with aneurysm of the abdominal aorta.
4. Congestion and emphysema of the lungs.

Comment

It is interesting that there was fibrous thickening at the upper end of the aortic aneurysm where the fascial strip and cellophane band had been placed. Also the wall of the sac seemed thickest in the upper anterior surface of the sac where the cellophane patch had been applied. No evidence of cellophane could be found on the aneurysm or in the peritoneal cavity at autopsy.

Because there had been a previous fascial taping at the neck of the aneurysm, it is impossible to say how much of the fibrosis was due to the fascial band and how much to the cellophane. However, it would seem logical to assume that the cellophane produced some fibrosis, at least on the anterior surface of the aneurysmal sac. For this reason, its use in the treatment of aneurysm would seem justified.

Summary

The case of an arteriosclerotic aneurysm of the abdominal aorta in a fifty-six-year-old male is presented. The patient had a palpable aneurysm for eight years before surgical treatment. He lived four years after a fascial taping proximal to the aneurysm and five months after placing a cellophane band at the neck of the aneurysmal sac and a cellophane patch over the anterior surface of the sac. The patient died of a coronary occlusion. At autopsy there was evidence of fibrosis caused by the cellophane.

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THE ASSASSINATION AND GUNSHOT WOUND OF PRESIDENT ABRAHAM LINCOLN

(Continued from Page 149)

destruction at the base of the brain and the pons seemed too great for survival even with a successful operation for removal of blood clots. There can be no doubt that the wound was a fatal one and that modern scientific medicine and surgery could not have saved the great man and President.

Lincoln, perhaps more than any man of our nation, has become enshrined in the hearts of the people. When the Blue and the Gray met and shook hands at the Bloody Angle on Cemetery Ridge at the Gettysburg Battlefield fifty years after the Battle of Gettysburg, the Rev. Dwight Hillis who addressed them, speaking of Lincoln, said, "When God wanted a father for his bondmen, He went to the poor man's log cabin in Kentucky, and taking his babe in his arms, called the best loved angel of heaven and of earth, the angel of mercy, and said—take this child, plant his pathway thick with thorns, cut his feet on the jagged rocks of time, take from him everything that he loves, break his heart a thousand times, and when you have done, bring him to the throne, and I will make him *great*. Thus did the great God make Abraham Lincoln the greatest man of the Republic."

RETINITIS PIGMENTOSA

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RETINITIS pigmentosa is a primary pigmentary degeneration of the retina. It is chronic in character. There is a slow progression of degeneration with a gradual loss of vision terminating in blindness.

There are two characteristic symptoms of the disease: (1) night blindness, (2) a gradual diminution in the size of the visual field. Early in childhood these patients complain of nyctalopia (night blindness). This is usually the first indication of a visual defect. With advancing years, there is a loss of the peripheral visual field until the patient has only central vision. Both of these conditions greatly handicap the individual. Other similar abiotrophic anomalies of the retina are choroideremia and gyrate atrophy. In this class of diseases the macula area is the last part of the retina to be destroyed. Some other hereditary retinal diseases are characterized by an involvement of the macula area very early in the disease, such as the Laurence-Moon-Biedl syndrome.

A great deal of work has been done on the hereditary aspect of retinitis pigmentosa and other abiotrophic diseases. Regardless of the diversity of opinion concerning the type of heredity, there is undoubtedly a strong hereditary tendency for these conditions to occur in families. In many studies at least one-half of the cases show a hereditary transmission. If an older child develops night blindness, other children surely are in danger of inheriting the same condition. A mother with primary degeneration of the retina may transmit the disease to her children.

There are three types of hereditary retinitis pigmentosa. First is the dominant hereditary type. This type is rare. In this type, the disease is transmitted through the female and affects the sexes equally. The affected patients inherit the disease from one parent and pass it on to half of the children. Usually retinitis pigmentosa develops late in life, between twenty-five and fifty years of age in the dominant type of heredity.

Second is the recessive type of inheritance. Most cases are of this type. The recessive trait is most often found in consanguinous marriages. The disease is more severe and appears earlier than in the other types of inheritance. The number of carriers in this type is twice the number of those developing symptoms of the disease. The avoidance of intermarriage is imperative. The children of a father with retinitis pigmentosa will all be carriers.

The third type is a sex-linked heredity, and this type is rare. In the sex-linked heredity, half of the sisters of a male with retinitis pigmentosa and all of the daughters will pass the trait to half of their male children.

The clinical fundus picture of retinitis pigmentosa is characterized by a decrease in the size of the retinal vessels and peculiar pigmentary formation. Following the degeneration of the retina, pigment migrates in clusters, usually around the retinal vessels, resembling bone corpuscles. The pigmentary epithelium of the retina is decolorized. The choroidal vessels are visible and the fundus becomes tessellated. At first, the spots are smaller and are seen mostly in the periphery of the retina. Gradually, the pigment corpuscles increase in size and number, and more and more of these appear towards the macula area. The retinal arteries are greatly reduced in size until the arteries are mere threadlike bands. A peculiar pale wax color is seen over the optic disk. This is due to a formation of glial tissue and not to atrophy of the nerve fibers.

Many patients with retinitis pigmentosa are highly myopic. Many other defects may be found in addition to the retinal degeneration, such as deafness, mutism, and oftentimes nystagmus. In the later stages, posterior polar cataracts develop due to the malnutrition of the retina. The essential pathologic process seems to be a progressive degeneration of the neural epithelium with an early destruction of the rods. The destruction of the rods results in the early symptom of night blindness. There is general destruction of the neural epithelium with the formation of glial tissue.

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Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30, 1947.

THE PRESENT STATUS OF THE RELATION OF CHOLESTEROL TO ARTERIOSCLEROSIS

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THE purpose of this paper will be to show in a general way the state of our knowledge as it relates to cholesterol metabolism and the development of atherosclerosis. It is hoped also that it will be possible to point out some of the deficiencies in our present knowledge of this important subject.

For several years it has been recognized that cholesterol is present in the atheromatous plaques of atherosclerosis. There has been no agreement as to the mechanism of entry of cholesterol into the intima of the arteries. The two most recent theories as to the mechanisms are those of Hueper[6] and Leary.[9] Hueper has suggested that the cholesterol enters into the subintimal tissues by simple imbibition as a result of a disturbance of the plasmatic colloidal equilibrium which holds it in solution. According to this theory, the cholesterol appears first as an extracellular material, which as an irritant produces fibrosis. The cholesterol is later taken up by phagocytic cells to form the so-called lipophages.

Leary has suggested, on the other hand, and has marshalled considerable evidence from experimental animals in support of his theory, that the cholesterol is esterfied in the parenchymal cells of the liver. He postulates that under conditions of overload the hepatic cells become unable to metabolize the material, presumably are damaged, and are phagocytosed by the Kupffer cells. The Kupffer cells, now lipophages, enter the blood sinuses of the liver, are carried through the lungs, and finally enter the systemic circulation.

Even if one adopts Leary's theory, at this point a question arises for which there is as yet no answer. Why do these phagocytic cells with their load of cholesterol show a predilection for certain blood vessels? Leary has attempted to answer this question by saying that young fibroblasts in young vessels are able to metabolize the cholesterol and clear it from the blood vessel walls, and, further, that certain blood vessels, those commonly the site of atherosclerosis, lose this fibroblastic metabolic activity in adult life.

This fibroblastic reaction may well be the mechanism of metabolizing the cholesterol deposited in the blood vessels during youth, but it does not indicate why one blood vessel will react in a way entirely different from another blood vessel of similar size and similar histological structure, nor why the blood vessels of one person will become sclerotic while those of another person will not.

It can only be concluded at this time that the pathogenesis of atherosclerosis is not yet understood.

While a great deal is yet unknown concerning the intermediary metabolism of cholesterol, certain basic facts are now well established. Cholesterol is an unsaturated monohydric alcohol, $C_{27}H_{25}OH$, which forms a series of esters with the common fatty acids. The substance is present in practically all mammalian cells. Numerous investigations have been undertaken to establish some viscus as the chief site of formation of cholesterol; however, the present thought is that the material is formed in the cells in which it is found or that it is ingested preformed. Cholesterol is closely related chemically to many of the plant sterols; yet it has been shown by Schoenheimer[10] that these plant sterols are not absorbed by the human. Cholesterol is excreted largely in the feces in the form of its reduction products, coprosterol and dihydrocholesterol. As early as 1920 Gamble and Blackfan[3] showed that the human infant excreted coprosterol in excess of its intake of cholesterol. This was taken to indicate that the human infant was capable of synthesizing cholesterol. More recent studies using tagged carbon have confirmed this early conclusion.

Numerous studies on the levels of cholesterol in the blood, in both health and disease, have been carried out. Reports have been at variance as to the blood levels in atherosclerosis. This discrepancy might in part be accounted for by the fact that the cholesterol levels found in whole blood, serum, and plasma differ significantly. It, therefore, becomes necessary to make all analyses on the same material. Whole blood gives the lowest

From the Department of Medicine, University of Minnesota Hospitals, Minneapolis, Minnesota. Aided by a grant from the Physicians and Hospital Supply Company Research Fund.

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values, oxalated or citrated plasma next, and serum the highest values. Heparinized plasma gives values comparable to serum which may be as much as 15 to 20 per cent higher than those obtained using citrated or oxalated plasma. This has been explained by Gardner, Gainsborough, and Murray[4] as the result of the shrinkage of the red blood cells due to the oxalate and citrate with a resultant dilution of the plasma cholesterol. We have found that oxalating the serum after separation from the cellular elements of the blood does not change the cholesterol content as determined by the method of Sperry and Schoenheimer.[11] The reduction is not apparently a direct action of the oxalate on the cholesterol. The difference in values obtained on serum and plasma are greater than one would expect from the amount of dilution encountered from ordinary oxalate, which is usually about 6 to 8 per cent. It does not seem then that one can accept without reservations the dilution theory as the entire explanation of the differences found in plasma and serum values. Discrepancies should be viewed in the light of the methods used and the materials analyzed.

More recently, probably as the result of improved analytical methods, more investigators are reporting what they regard as significantly elevated serum cholesterol levels in patients with proven atherosclerosis. Among these are Davis, Stern and Lesnick,[1] Steiner and Domanski,[12] and more recently Herrmann.[5]

The very nature of atherosclerosis, with the difficulties of early diagnosis, makes the accumulation of data difficult except late in the disease. Thus rarely can one know for sure what was going on during the period of the formation of the atheromata. It is conceivable, as suggested by Leary,[7,8] that the end result of atherosclerosis represents repeated episodes of hypercholesterolemia over a period of years with perhaps relatively normal values in the intervals. Attention has been called by Huepper[6] to the fact that once free cholesterol is deposited in the intima of the blood vessels it is in a relatively inert form and would be expected to remain either permanently or for a long period of time.

In support of this concept of repeated intermittent accretions during periods of hypercholesterolemia is the previously cited work of Steiner and Domanski.[12] They found that, whereas the serum cholesterol levels in their normal controls were relatively constant over the two-year period of observation, the values in individual patients with coronary arteriosclerosis fluctuated widely during the period of study.

It is hardly necessary to call attention to the incidence of atherosclerosis in such conditions as diabetes and hyperthyroidism—conditions which are associated with hypercholesterolemia.

Faber[2] has recently published the results of analyses of the aorta in normal persons and in patients with coronary occlusion. He has correlated these with serum cholesterol levels in the same individuals. In the control group he found an increasing amount of cholesterol in the aorta with increasing age, which was not related to any increase in the serum levels. On the other hand, in the patients with coronary occlusion he found a number of younger individuals with an increase in the cholesterol content of the aorta well above that of a much older group. In this group with increased cholesterol content of the aorta there was an associated hypercholesterolemia in the nonhypertensive individuals, yet not in those with hypertension. It would seem then that two factors might be operative: one a metabolic factor which results in hypercholesterolemia and produces atherosclerosis, the other a tissue factor dependent on injury to the vessel, as for example from hypertension, with an increased tendency toward the deposition of cholesterol even in the absence of hypercholesterolemia.

It would seem, therefore, that evidence is accumulating which is suggestive, at least, that certain individuals possess an inherently defective mechanism for metabolizing cholesterol. These individuals may resemble the rabbit, a species which develops atherosclerosis quite uniformly if fed cholesterol. Conversely, other individuals may be more similar in this respect to the rat, in which cholesterol feeding does not produce atherosclerosis.

Studies have been undertaken to evaluate the response of various individuals, both normal and atherosclerotic, to varying loads of ingested cholesterol. It is too early yet to report on the results of these studies.

The discovery of certain lipotropic substances which will mobilize lipids from the liver, has suggested to us that these same substances might be effective in mobilizing cholesterol from atherosclerotic arteries, or, what is more likely, they might be effective in preventing the deposition of the lipoid in the vessels of those individuals who are

predisposed to hypercholesterolemia. We are not yet in the position to report upon our experiments along this line, but Herrmann[5] has recently reported upon the effects of decholesterizing agents, among which are some of these lipotropic substances. He has found what he regards as a significant effect from substances like choline, methionine, and inositol. More work is necessary along this line before any definite conclusions can be drawn.

Conclusions

1. Cholesterol would seem to be related etiologically to the development of atherosclerosis. The exact mechanism is not yet established.

2. It is suggested that certain individuals have an inherent defect in cholesterol metabolism which results in fluctuations in their serum cholesterol levels, probably related to dietary intake. It would seem that these individuals should be protected from overload by ingesting a diet low in cholesterol.

3. There is suggestive evidence that certain of the lipotropic substances may be effective in reducing the serum cholesterol levels in certain individuals with atherosclerosis; however, further work is necessary on this subject.

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RECURRENT DISLOCATIONS OF THE SHOULDER

(Continued from Page 152)

a well-developed subscapularis muscle, and it is my belief that a well-functioning subscapularis muscle is the best insurance against recurrence of a habitual dislocation of the shoulder.

Summary

1. The basic principles for correction of recurrent dislocations of the shoulder are enumerated.

2. The operative technique utilizing the principle of a tendon transplant is described.

3. A plan for postoperative management is outlined. Emphasis is placed upon a period of adequate immobilization followed by a well-guided program of muscle rehabilitation.

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THE FERGUS FALLS CANCER DETECTION CLINIC

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The first Cancer Detection Clinic conducted by a Medical Society in Minnesota was held in Fergus Falls on December 13, 1947. It is the purpose of this paper to set forth the rules and regulations, the organization and the results of this experiment.

Rules and Regulations

Each rule of conduct was separately voted upon by the Park Region and District County Medical Society at a previous meeting. Those of basic importance concern the examinee, fee, examining physicians, extent of the examination, reports, follow-up time, place, lay aids, promotion, registration, and the responsible committee.

It was decided to invite all apparently healthy adults regardless of financial status without reference and any others especially sent to the Clinic by their physicians with a letter of introduction. There was to be no fee. All participants conducting the Clinic, both professional and lay, were to be on a voluntary nonpay basis. Primarily, because of the prospects of a greater local success, representatives of the specialties, dermatology, surgery, gynecology, internal medicine, and otolaryngology were to be invited in to be in charge of their particular sections of the examination. The expenses of the out-of-town specialists were to be paid up to $35.00 if requested. The local physicians were to assist in any part of the physical examination best suited to themselves. It was decided to hold the Clinic on a Saturday so that more of the local physicians could participate and a grade school could be taken over for the entire day.

A history and physical examination form prepared for cancer detection examination by the Kansas State Medical Society was adopted. This form permits a checking of symptoms by systems in the past history of the examinees by nurses. The physical findings have an anatomical arrangement which facilitates the recording of special fields of examination by the specialists. In addition, there is a summary of findings and recommendations at the end of the folded four (4) page record. Routine visualization of the cervix and rectal examination were considered essential. However, proctoscopic and laryngoscopic examinations were to be carried out only at the discrimination of the examiner. Biopsies, x-ray examinations and therapy were specifically excluded. No comment concerning the findings or recommendations were to be made to the examinee except that they were to call their family physician.

All completed reports were to be sent to the examinee's local physician. The examinees were to be sent a postal card reminding them to call their family physician concerning the results. A statistical review of the records were to be made by the Committee on Cancer of the State Medical Society.

This group was also asked to follow up case studies through the family physicians involved and summarize the entire experience.

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The local nurses' organization, the Red Cross and their nurses' aides were to be depended upon for a great contribution of time and effort. Other local organizations including the American Legion and the American Cancer Society consented to help. The latter organization was asked to pay the expenses of the imported specialists and other incidental expenditures. The Red Cross organization served coffee and doughnuts throughout the day to all assistants.

Two large advertisements announcing the time, place, sponsorship, limitations to healthy adults, place of registration, et cetera, were to be published in the local newspaper. Pertinent news items using local names were to be published and the radio station was to contribute spot announcements of the clinic.

All examinees were to register by phone at the local Red Cross office or with their family physician at least one week preceding the clinic. The examinee's name and family physician were recorded and appointments were given the rgistrants. It was left up to the local committee of three physicians to carry out the rules set down by the society and decide any of the details which might arise.

Clinic Organization

One week before the established date of the clinic 400 examinees were registered. Tactics developed in the late war for physical examinations of large numbers of men and women were adopted. Two series of examination rooms were set up to accommodate the two sexes (see accompanying sketch).

All examinees were checked at the entrance to the large gymnasium to establish their appointment. They then entered orderly lines to receive their case record from six lay typists who filled in the name, address, phone number, nearest relative, and name of the family physician.

In Room 1 the positive findings in their past histories were checked by six nurses.

From here all examinees visited Room 2 for ear, eye, nose and throat examinations, carrying their record sheets with them. Laryngoscopic examinations were performed only when indicated. Three specialists aided by two recorders were necessary.

The examinees undressed in separate rooms (3 and 4) and the women were supplied with a loose dress or dressing gown and shoes, and the men with pants and shoes. Weights, blood pressures, and temperatures were recorded here by male and female assistants.

The women proceeded to the gynecology room (5) where five examining tables were lined up facing one wall with tables, pans of cresylone, towels, speculae, flash lights, et cetera. Four physicians, four nurses and three recorders were necessary. The breasts, abdomen, cervical and rectal examinations were performed and results and recommendations recorded. In Room 6 the skin and mouth were examined by the dermatologist

SKETCH OF ARRANGEMENT OF EXAMINING ROOMS IN THE SCHOOL

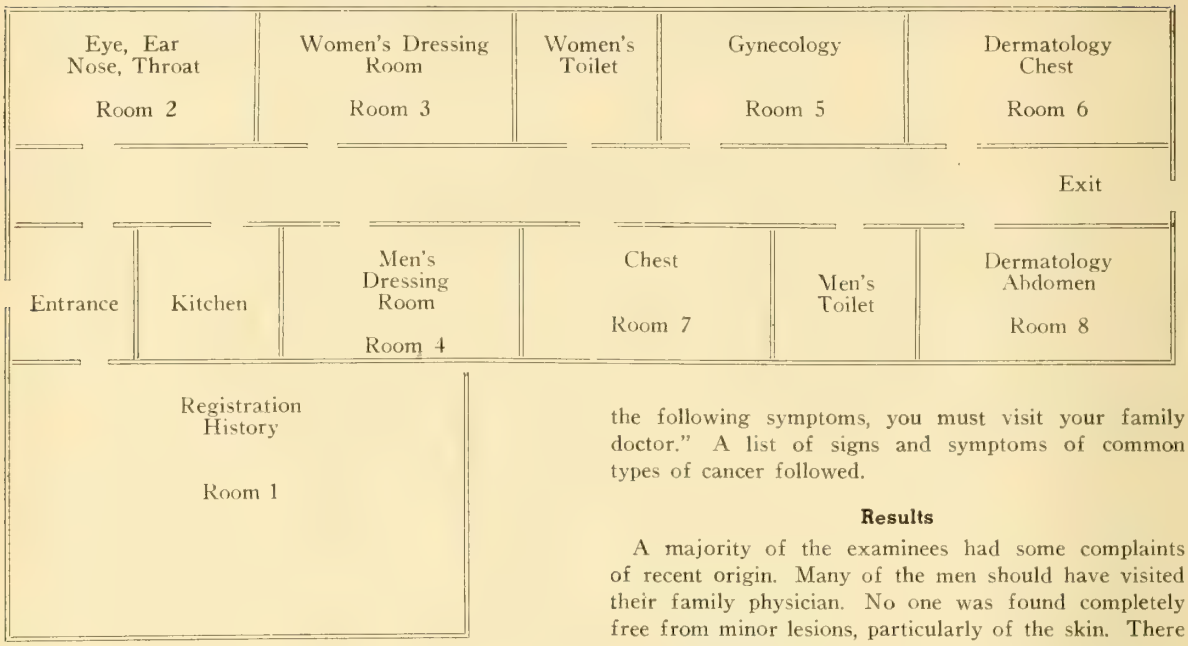


TABLE I. FREQUENCY OF SELECTED SUBJECTS IN THE PHYSICAL EXAMINATION, PAST HISTORY AND RECOMMENDATIONS

Physical Findings	*Women*	*Men*
Cervical ulcer, erosion, etc.	90-47%	....
Breast tumors	5-3	....
Moles	137-71	49-55%
Keratoses	40-20	11-12
Hemorrhoids	47-24	7-8
Murmurs	12-6	2-2
Hypertension	39-20	14-16
Prostatic hypertrophy	....	13-15
Other tumors	24-12	21-24
Other organic diseases	28-14	10-11
Some Items in Past History		
Headaches	63-33	21-24
Dizziness	53-27	22-24
Ringing in ears	30-15	4-5
Constipation	62-32	26-30
Other G.I. complaints	88-45	41-47
Evidence of peptic ulcer	....	8-9
Dyspnea	26-13	2-2
Recommended Diagnosis and Treatment		
Biopsy or cautery cervix	54-27	....
Dilatation and curettage of uterus	43-20	....
Skin biopsy and treatment	15-8	3-3
Skin surgery	46-24	5-6
Other biopsies	9-5	3-3
G.I. tract x-ray	16-8	18-20
Barium enema	7-4	11-12
Other laboratory procedures	10-8	22-24

and two physicians performed chest examinations on five examining tables. Three nurses and two recorders were used.

On the men's side there were two additional stops. In Room 7 chests were examined with the patient standing. In Room 8 abdominal, rectal and skin examinations were completed by three physicians with the aid of three nurses and two recorders.

After the examinations, all the examinees were given a card stating, "No examination will completely rule out the presence of hidden cancer. If you develop any of the following symptoms, you must visit your family doctor." A list of signs and symptoms of common types of cancer followed.

Results

A majority of the examinees had some complaints of recent origin. Many of the men should have visited their family physician. No one was found completely free from minor lesions, particularly of the skin. There were 191 women and 88 men examined between 9:00 a.m. and 6:00 p.m. Of the women, 125 (65 per cent) and of the men 64 (72 per cent) required treatment or further diagnostic study by their family physician. Selected subjects from the past histories, physical examinations and recommended procedures of diagnosis and treatment are best reviewed in table form (Table I). Scientific programs emphasizing early detection of cancer were presented to the local medical society and the laymen at separate meetings in the evening. Both were well received and proved to be an appropriate climax of the day.

Conclusions

Most of the physicians taking part in the examinations felt that they had experienced a momentous day, that the experiment was well worth the effort and that similar clinics could profitably be organized in other parts of the state. The local physicians were pleased with the results. A closer relationship between the laymen and physicians of Fergus Falls unquestionably exists as a result of the understanding co-operation in the clinic. The term "apparently healthy" adult does not define the patients attending this cancer detection clinic. The majority of the examinees had complaints of recent date, many had a history of cancer in the family and there was an unusually high percentage of disease processes found. To eliminate those with active symptoms from a clinic intended for "apparently healthy" adults some barrier must be set up at the time of registration. Disregarding the educational value of the clinic to both physicians and laymen and the services rendered to 279 people in Fergus Falls, we feel this experiment will reflect itself in cancer research. This will result in part through a stimulus to the many people throughout the state who are anxious for the physicians to show a more co-operative spirit in the present widespread movement to control cancer.

Case Report

TOXIC NEURORETINITIS

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Mrs. J. C., a married woman, aged twenty-three, was referred by her family physician, Dr. H. Fisketti, on March 26, 1947, complaining of severe frontal headaches, shooting pains in the eyes and sudden loss of vision. The headaches and ocular pain had begun on April 23 after attending a theatre. She didn't care to eat and had one emesis that evening. On the following evening her vision had blurred until she was unable to read newsprint. She stated that she at first noted several blind areas which gradually fused together until the whole visual field was obscured. She had admitted "having a drink" on the night prior to onset of symptoms and wondered if this could have any relation to her blindness. She denied any contact with chemicals, dyes or varnishes and had taken no drugs.

Her past history was essentially irrelevant. She had diphtheria as a child of four with no sequelæ. Four months prior to her present illness she had given birth to a normal child. She had excellent obstetrical care including both prenatal and postnatal observation. There was no indication of toxemia. There was a slight "hydronephrosis of pregnancy" one week before delivery which responded to bed rest. Her postpartum blood pressure was 124/78. Her pulse, respiration and heart rhythm were recorded as normal. She was discharged from the hospital on the fifth postpartum day. One week before her present illness, she had a slight attack of pharyngitis which cleared up in a day or two. She had worn glasses for three years for a moderate hyperopic error. Her corrected vision had always been excellent.

On examination, vision with correction was reduced to counting fingers at 8 inches in the right eye and 20/200 plus 1 in the left eye and could not be improved. There was tenderness on pressure on the globes. The pupils were in mid-dilatation and reacted rather sluggishly to light. The extra-ocular movements were normal. The media were clear throughout. Both retinas showed a half dozen or so soft, fluffy, pale grayish patches of edema about ¼dd in size around each macular area. The nasal margins of the discs were partially obscured. The veins were a little over full. The visual fields were normal in outline and no central scotomata could be found, but there were several relative paracentral scotomata in either field. A diagnosis of toxic retinitis or neuroretinitis, of unknown origin, was made, and the patient was hospitalized on the following day where complete diagnostic study was made.

General physical examination, apart from the eyes, was negative except for marked sinus arrhythmia and a moderate exaggeration of the deep reflexes. The patient suffered excruciating headaches and orbital pain the first day in the hospital, complained of vertigo, and vomited once. Sodium salicylate and sodium bicarbonate were administered by mouth. Penicillin was given intramuscularly to combat any possible infectious agent. The headache and orbital pain were gone on the second hospital day but the globes were still tender. The pupils were widely dilated and failed to react to light or convergence. Vision was further reduced to bare hand movements in either eye. The patches of retinal edema coalesced until the whole macular and paramacular regions were diffusely edematous. The foveae were obscured. The discs became slightly hyperemic and the margins more blurred but were never appreciably elevated. On March 30 the patient complained of impaired hearing in the right ear. With it, she could hear a watch only at contact as compared to at 8 inches with the left ear. A neurological examination by Dr. L. R. Gowan on March 29 had been entirely negative except for the second and eighth cranial nerves. On April 2 the retinal edema began to recede and a faint greenish pigment tinge appeared in the paramacular regions. From this time on vision was rapidly recovered, and on April 9, the date of her discharge from the hospital, she could read one-eighth-inch type. The retinal edema was largely cleared, but several clumps of pigment were appearing in the paramacular areas, generally corresponding to the original patches of edema. The deafness increased.

X-ray examinations of the skull, paranasal sinuses and chest were negative. An electrocardiogram only confirmed the marked sinus arrhythmia noted clinically. Repeated urinalyses were negative. The white blood count reached 9,300 on one occasion. Red blood count was 4,390,000 and hemoglobin 13.5 gms. (95 per cent). Differential blood count was normal. Sedimentation rate was normal. Blood sugar was 93.0 mg., urea nitrogen 19 mg., and creatinine 1.5 mg. per 100 c.c. The Kline blood test was negative. Spinal fluid pressure, cell count, proteins and sugar were normal and the Wassermann negative. The blood serum failed to agglutinate B. melitensis or B. tularense, and agglutinated B. typhosis and B. parathyphosis only in 1:80 dilutions. Blood pressure was normal and temperature was normal throughout. On the basis of these essentially negative findings, it was considered that infection as the etiologic agent was highly unlikely.

After leaving the hospital she was examined at frequent intervals in the office. The pupils rapidly returned to normal. The retinal edema further cleared and vision continued to improve. On April 11 vision was 16/200 in the right eye and 20/200 plus 1 in the left eye. Visual fields were normal in outline and showed several small paracentral scotomata but no central scotomata. These scotomata corresponded generally with the areas of pigmentation. On April 22 corrected vision was 20/50 in each eye. However, there followed a slight relapse for two days, during which the eyes became tender and pained and vision fell to 20/200 and 20/65. This loss was rapidly regained during the next few days. On June 5 her vision was 20/30-1 in each eye. The fundi and visual fields had not significantly changed. There was a 60 decible hearing loss in the right ear. Pulse rate and rhythm were normal.

Until April 2, twelve days after the onset of symptoms, we were completely in the dark as to the etiology, when the patient volunteered the information that on the night previous to the onset of her symptoms she, with her husband, set out for a night of celebrating. They visited several hotel bars and night clubs and had eight or ten "or more" drinks of a mixture of bourbon whiskey and coco-cola. At the last stop, at a club of rather unsavory reputation, the patient complained that her drink tasted bitter and made her rather nauseated. She did not finish it for this reason. This revelation, together with the

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quite typical delayed onset of symptoms and course of the illness, led to the suspicion that her last beverage may have been contaminated with methyl alcohol.

Discussion

Methyl alcohol even in small quantities is known to produce severe grades of blindness. Ziegler[7] stated that one teaspoonful has been known to cause blindness. Methyl alcohol is a common adulterant of cheap liquor. It is incompletely oxidized in the body to formaldehyde and formic acid and the latter is very slowly eliminated. The formic acid is thought to produce an acidosis. Either formaldehyde or formic acid have been shown by Fink to act similarly to methyl alcohol itself and to produce, in animals, lesions in the ganglion retinal layer indistinguishable from those produced by methyl alcohol. The onset of symptoms in the writer's case—severe headache, orbital pain, nausea and vomiting twelve to fifteen hours after ingestion of a suspicious beverage—are quite characteristic. The sudden severe loss of vision, the dilated fixed pupils, and the rapid subsidence of these symptoms compared quite closely with most recorded cases of proven methyl alcohol poisoning in which recovery has occurred. Deafness has also been recorded many times.

Formerly, methyl alcohol was classed with other toxic agents, such as quinine, lead, ethyl alcohol, tobacco, carbon disulphide, iodoform, and arsenic compounds, which have a predeliction for the retrobulbar portion of the optic nerve and particularly the papillo-macular bundle and thereby give rise to central or caecocentral scotomata. In such cases, classified as retrobulbar neuritis, the opthalmoscopic picture is essentially negative or there may be seen only pallor or hyperemia of the optic disc. In many cases of methyl alcohol poisoning the toxin has acted in this manner. But there are other recorded cases which have not conformed to this picture. Moreover, histological studies in fatal cases have demonstrated that the chief and perhaps the primary lesion is in the ganglion cell layer. Birch-Hirshfield[1] concluded after histological studies that the primary lesion is in the ganglion layer and that damage to the nerve is secondary to death of the ganglion cells. Fink,[3] in experimental work on dogs and rabbits, has found extensive changes in the ganglion cells and relatively little damage to the nerve fibres. Schwartz,[2] who studied two cases histologically, found no damage to the optic nerves but found retinal changes which he considered responsible for the blindness. Menne[4] sectioned one eye from each of twenty-one fatal cases. I shall quote from this report: "Microscopically little change was observed in the optic nerves except for edema and hyperemia and some patchy proliferation of glial cells. The most prominent alterations were observed in the ganglion cells of the retinas: irregular staining, eccentric placement of nuclei, fraying of cytoplasmic outlines, vaculation and autolysis. In many instances only about one in fifty of the cells approached normal, while in some eyes they were entirely absent in wide areas. These changes in the ganglion cell layer were most marked nearest the disc."

From these reports of histological studies, all of which emphasize extensive destruction to the retina, one should expect to see some ophthalmoscopic evidence of this pathologic condition in cases of methyl alcohol poisoning. One wonders if this evidence isn't often overlooked, as the great majority of cases reported were not studied by opthalmologists. With the pupils widely dilated, the early retinal edema in the writer's case was overlooked by an intern until it was pointed out. Furthermore, as a large percentage of such patients die in the first few hours or days, pigment has not had time to migrate to the inner layers of the retina where it can be seen. In mild cases rapid recovery of a large percentage of vision might distract one from a careful study of the retina.

One may wonder why two or more people imbibing the same adulterated beverage would not be similarly poisoned. In answer to this, Casey Wood[6] stated that "Methyl alcohol is an example of idiosyncrasy. Some persons are largely immune as far as permanent damage to the organism is concerned. Of ten persons drinking 4 ounces of methyl alcohol within three hours, all will have marked abdominal symptoms and probably four will die. Six will recover, and two of these will be blind." It would seem that some individuals are capable of more completely oxidizing and eliminating methyl alcohol than others.

Merritt and Brown[5] reported a patient poisoned by methyl alcohol who had an attack resembling coronary occlusion on the way to the hospital. They found electrocardiographic changes and felt that the acidosis produced may have had a profound effect on the heart. The writer's case had a marked arrhythmia at the height of the toxemia which disappeared by the time the patient left the hospital.

Summary

In summary, a case of rather severe toxic amblyopia, accompanied with headache, orbital pain, vertigo, nausea and vomiting, has been reported. The paramacular regions of the retinas showed patchy edema becoming diffuse and later replaced with superficial patchy pigmentation. Approximately 90 per cent of vision was recovered. The etiology is unknown but the symptoms and course closely parallel the picture of mild methyl alcohol poisoning. References are cited to show that retinal pigmentation is not necessarily incompatable with lesions produced by this agent.

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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Rochester, Minnesota

(Continued from January issue)

Frans Josef (later these names were anglicised to Francis Joseph) **Van Mackelenbergh** was born on April 7, 1834, in the historic city of 'S Hertogenbosch (Bois le Duc), in North Brabant, Holland, one of the five children of Frans Van Mackelenbergh and his wife. The Van Mackelenbergh family came of an ancient line in Holland; for many generations its members have been wholesale dealers in hardware, a firm whose traveling representatives have been known in every civilized country of the world except the United States. Of the Roman Catholic religion, the family has been characterized by devout faith and by generous giving to the church, both of its wealth and, in all generations, of its men and women to serve as priests and nuns. Since World War II started, nothing has been learned directly of the present representatives of the family in Holland and their interests; a Dutch refugee, a young woman who escaped to America via France and England, told members of the American branch (in 1943) that everything in the region in which the family resided had been confiscated by the enemy.

Frans Josef Van Mackelenbergh and his brothers received their early education in 'S Hertogenbosch, probably at the famous old grammar school at which Erasmus (1466-1536) once was a pupil. It was expected that in due time Frans would join his brothers, John, the eldest, Ambrose, and a third in the conduct of the wholesale hardware enterprise, and in preparation for this career and for the extensive traveling that would be part of it, he mastered five European languages, including English. When he was a young boy, he was busy during the summers in his father's business establishment; a few years later his vacations were spent in both educational and commercial pursuits when he acted as a salesman in the business, traveling through Europe and, on one occasion, to the Dutch East Indies. Already it had become evident, however, that business was irksome to Frans Josef and that he was interested rather in medical science, and accordingly his father sent him first to the University of Leyden to study in its world-known school of medicine and later to a medical school in France.

During his months in the Dutch East Indies and on the Malay Peninsula, in 1854, the student availed himself of the opportunity for scientific medical research and thereby obtained much interesting and useful knowledge. On the return voyage to Holland the ship was wrecked in a tropical storm and it was only after weeks of drifting in life boats (the entire voyage consumed three months) that the little group of survivors, of which Frans Van Mack-

elenbergh was a member, was rescued and taken to the island of St. Helena, off the southern coast of Portugal, until transportation home could be arranged. Correspondence of that period, preserved in the family records which recently have been translated into English, includes a letter from Frans' mother dated on January 7, 1855, which makes it clear that the boy had written home after a long absence and that news of him had given great joy to his family. In the following March his mother wrote with much concern regarding a dangerous illness from which Frans happily was recovering; this is the letter of a loving and devoutly religious mother. Another letter from her in the same month states that the visit which one of his brothers had intended to make Frans had been prevented by the most severe winter ever known in Holland. By April the traveler was able to return home.

Within the next decade there were changes in the family circle and in personal plans. The senior Frans Van Mackelenbergh died, as did one of his sons and a daughter. The eldest son John with his brother Ambrose succeeded to the headship of the family's mercantile company. Frans Josef Van Mackelenbergh, on his return from the East Indies, definitely had allied himself with the profession of medicine and had become a well-qualified physician whose chief professional interest then, as later, lay in the study of and treatment for chronic diseases. By the early sixties he had begun to look toward America as a new home and field for work and in 1866, immediately after his marriage to Magdalene Van Velthoven, like himself a member of a native Dutch family long in Holland, he sailed with his wife for America, en route to a Dutch settlement at Beaver Dam, Wisconsin. Arrived at Beaver Dam, Frans and Magdalena Van Mackelenbergh were disappointed to find that the Hollanders of that settlement were from a different province of The Netherlands than themselves and that variation in language made communication difficult. Having a friend, a Mr. Davis, in Waupun, Wisconsin, the young couple moved to Waupun for a few months, and in that village, in 1867, was born their first child, Francis Josef. Presently the little family moved to Chicago, where Dr. Van Mackelenbergh entered medical practice; in Chicago for a period of some length Mrs. Van Mackelenbergh, with the baby, lived at a convent where among the nuns she learned to speak English and to accustom herself to the strange manner of American life. It was during the years in Chicago that the second son, Ambrose, was born; this child died in infancy as the result of an accident when his nurse let the baby carriage plunge from the sidewalk over a high embankment. In 1871 a third child, Agnes Frances, was born.

Chicago was not a fortunate home for this family. There they first knew great sorrow. There, toward the end of their residence in the city, in 1870 or 1871, Dr. Van Mackelenbergh late one night as he was returning from a sick call was set upon by thugs who beat him severely and robbed him. And in the great Chicago fire of October 8 and 9, 1871, all their household goods and the doctor's offices and his entire professional equipment of books and instruments were destroyed. There remained to Dr. and Mrs. Van Mackelenbergh only the box of family goods and heirlooms which by happy decision they had left with their friend, Mr. Davis, in Waupun.

At this time of misfortune Dr. Van Mackelenbergh heard about an opening for a physician in the little hamlet of Greenleafton, York Township, fifteen miles southwest of Preston, in Fillmore County, Minnesota, and to this community, which had been founded in the fifties by a group of Pennsylvanians, representatives of the Dutch Reformed Church in America, Dr. and Mrs. Van Mackelen-

bergh came with their two children early in 1872. Again they encountered the embarrassment of difference in native language and, perhaps, lack of sympathy in religious belief, inasmuch as they were faithful Roman Catholics and Greenleafton was a settlement of Protestants. And again they sought a new location, which they found close at hand, in the village of Forestville. This little settlement was the center of a thriving and promising community of many substantial pioneers, the owners of good farms and comfortable homes. The village had an outstandingly fine general store and a flour mill, with the usual complement of mills of other types. In Forestville Dr. Van Mackelenbergh and his family were welcomed warmly and there they established their home and the doctor entered medical practice. In his old papers there appear the names, as friends and patients, of families that for generations have been well known in the county: Le Fever, Meighen, Foster, Storm, Reidell, Roeder, Kirvin and Winters, among others.

Dr. Van Mackelenbergh settled in Forestville about a year after Dr. Russell L. Moore had removed from the village to Spring Valley and probably at about the time that Dr. Henry L. Wilson moved to southwestern Minnesota. From the beginning he worked beyond his strength under the severe conditions of country practice of those years. At the time of his arrival there was in the community an epidemic of smallpox and subsequently there were sporadic outbreaks of diphtheria. He cared for the victims of these and other communicable diseases; dealt with chronic diseases, in which, it has been noted, he was particularly interested; with surgical emergencies; and with obstetrical cases. He sat up many nights in succession to watch by bedsides becauses nurses were few; cases are recalled even yet in which his skill and knowledge saved patients whom other physicians had given up to die. Because, other than the main stage route through Forestville, roads in the community were practically nonexistent, he traveled across fields and pastures and up and down the endless hills in horse-drawn sulky or buckboard or on horseback with his instruments and medicines in saddlebags. With all his gentleness to family and patients and his forgetfulness of self, he was a proud man; he loved to drive horses of pride and spirit equal to his own, and these horses, no more inured than himself to pioneer life, sometimes in their fright ran away and thereby endangered him twice over; on several occasions he was chased by wolves, twice he nearly froze to death.

In 1874 Dr. Van Mackelenbergh moved from Forestville to Spring Valley, perhaps because the former village had been left to one side by the Southern Minnesota Railroad and its fortunes unmistakably were declining, and because prospects were better in the latter settlement, which had become a railroad point. In Spring Valley, Spring Valley Township, on the western border of the county, knowledge of his skill in treatment for chronic diseases had preceded him and there he made many new friends. It was then that his professional card appeared in the local newspaper, *Western Progress:* "F. J. Van Mackelenbergh, Physician. Office at Cobb's Drugstore and at residence, two blocks south of the school house." In the next few years his announcements appeared intermittently, as did those of contemporary physicians, and it is worthy of note, for historical record, that in the printing his name underwent various changes and corruptions, as thus: F. G. Macklenbergh; F. J. Van Mecklenbergh; and F. G. McLenbergh. In this period also he was a patron of Andreas' "Illustrated Historical Atlas of the State of Minnesota," published in 1874, in which there appeared the entry: "T.

J. Van Mackelenbergh, physician and accoucheur." In the issue of 1880-1881 of a state gazeteer and business directory his name appeared correctly, but in the official register of physicians who were licensed in Minnesota during the period from 1883 to 1890, inclusive, in the section by counties, there is only the entry, "Exempt. Mecklenberg. Wykoff." It is recorded among documents in the possession of his family that after the passage of the medical practice act of 1883 Dr. Francis Joseph Van Mackelenbergh was licensed to practice medicine in the state under an exemption certificate.

Although Dr. Van Mackelenbergh prospered professionally in Spring Valley, it was there that the years of arduous practice began to take their toll of his health. And it was in 1880 and 1881 that little Agnes Frances began to give her father the help that was to continue the remainder of his life; driving his horses, sitting with him at the bedsides of patients, aiding him in the procedures of treatment and nursing. It is small wonder that after sixty-two years, memories still should be vivid of the pounding on the Van Mackelenbergh door at night when a relative of some sick person dashed up, usually on horseback, to summon the doctor; of the crawling out of bed and going into the dark barn to hitch up the horses, and of the driving out into the night. One trip after midnight was to the village of Fillmore, six or seven miles to the northeast, on the Root River, to attend an old soldier who was in great pain. Incidentally, payment for this visit never was made, and there were many comparable trips and many equally unprofitable visits to numerous patients in a widespread practice. Furthermore, the years in Spring Valley brought renewed and deep sorrow to the Van Mackelenbergh family. It was there, in 1879, that the eldest child, Francis Joseph (Frank), died at the age of twelve years, and that the fourth child, Roman Aldus, who was born in Forestville, on December 22, 1872, died at the age of ten years. Both children were buried in the Catholic cemetery at Carimona, in Carimona Township. Not long after the death of Roman Aldus the family moved, probably in the late summer of 1882, because of their grief, from Spring Valley to Wykoff, in Fillmore Township, about eight miles east of Spring Valley and about the same distance northwest of the former home in Forestville. In Wykoff sorrow pursued them, for in that village, on March 7, 1886, died Alphoso, the only remaining son, in his tenth year; burial was made in the Catholic cemetery at Carimona.

At Wykoff the hardships of county practice were not abated. There were continual exposure to weather; arduous trips on horseback or in vehicles over rough roads; lack of Sundays, holidays and recreation; lack of rest and sleep and proper food, because this physician, like many another early practitioner, took his meals when and where he could during his long rounds. The toll was heavy and Dr. Van Mackelenbergh's health progressively failed.

Francis Joseph Van Mackelenbergh died in Wykoff on March 18, 1892, in his fifty-eighth year. He was buried in the Catholic cemetery of the village. Some years subsequently his widow, Magdalena Van Velthoven Van Mackelenbergh, was married to Robert M. Foster, of Forestville. She died on April 26, 1921, aged seventy-seven years.

In 1943 the one surviving child of Dr. and Mrs. F. J. Van Mackelenbergh was their only daughter, Agnes Frances Rau, wife of George J. Rau, of Adams, Mower County. There were living also three granddaughters of the pioneer physician and his wife: Mrs. A. J. P. (Clara) Jelnik, of New Prague, Minnesota; Mrs. Alyce Vick, of Anoka, Minnesota; and Mrs. L. D. (Margaret)

McGuire, of Omaha, Nebraska. The great grandchildren were, in the Vick household: A. Thomas, Mary Jayne, Frances Ann and Marjean; and in the McGuire family: Richard, Terrance, Lawrence and Michael.

T. Veenschoten in the eighties is believed to have been physician and postmaster at the hamlet of Greenleafton, in section 1 of York Township, fifteen miles southwest of Preston. The little settlement was founded early by a group of pioneers representing the Dutch Reformed Church and it "was named in honor of Miss Mary Greenleaf, of Philadelphia, who generously gave three thousand five hundred dollars to build the Dutch Reformed Church edifice." Dr. Veenschoten's name has been observed by the writer only once.

Lyman Viall was born in New York State on December 18, 1818, and was one of a family of seven children, his brothers being Milton, Frank, Mulford and Andrus and his sisters Hulda and Aurella. He received his early education in the schools of his native place and when a young man came with other members of the family into the Mississippi Valley during the exodus from east to west that took place in the middle decades of the nineteenth century. Two of the brothers, Frank and Andrus, settled eventually in Wisconsin and another two, Milton and Lyman, in Minnesota.

It is probable that Lyman Viall received his medical training primarily under a preceptor, as was the custom at that period. Subsequently he studied at a medical school of the regular system in Chicago, perhaps, it has been suggested, at Rush Medical College. His name has not been observed in medical directories or in medical registers.

Dr. Viall first practiced medicine in the vicinity of Downer's Grove, Chicago, for an unknown number of years. By an early marriage, either in the East or in Chicago, he had two children: Mary (afterward Mrs. Ober) and J. Burke Viall. After the death of his first wife he was married, on October 5, 1858, at Brush Hill, Illinois, sixteen miles from Chicago, to Helen C. Gage, who was a native of Wood County, Ohio, born on November 29, 1831. Of the second marriage there were four children: James Gage, Bard Ellsworth, Ralsy Edward and Harry Lyman. In adult years James Gage became a brick layer, Bard Ellsworth a banker, Ralsy Edward an employe in the steel mills and Harry Lyman an electrician.

Dr. Viall has been mentioned as being in Winona, Minnesota, in the late fifties, and it was not long after that time, in 1860 or 1861, that he settled on a farm three miles north of Spring Valley, Fillmore County, in the community in which his brother, Milton Viall, also established a home. For nearly ten years Dr. Viall farmed, applied his skill as an excellent carpenter and, from his home as an office, carried on a general medical practice, locally and at considerable distances as required. He must have had unusual success in treatment for smallpox, because he has been recalled in the region as a "smallpox specialist"; and in a subsequent period, in Preston, much of his professional activity had to do with the disease. One of his sons has the vivid memory from childhood years of seeing his father many times ride away on horseback and of knowing that his destination was a home where someone had smallpox. Dr. Viall himself, when yet in Illinois, was a victim of the disease. The local authorities placed him in the pest house and there he underwent a serious illness and a stormy convalescence, stormy in more senses than one, for the roof of the pest house was not weatherproof and during heavy rainstorms the

water poured through upon the patient. It may well have been that his interest in smallpox and the proper care of sufferers from the disease dated from that time.

Early in 1869 Dr. Viall settled in Preston and in March, on the outbreak of smallpox in the village, he promptly was constituted health officer, the house in which the patients lay was declared a hospital by the local board of health, and Dr. Viall was "required to procure suitable nurses for the sick in said hospital and to do such other things as may be necessary under the premises." His interest and success in the treatment for smallpox continued throughout his practice, as evidenced by many notes in the local newspapers. In June, 1882, the *National Republican* commented that Dr. Viall had another smallpox case on his hands. The patient was one of a Norwegian family of eight or nine children, none of whom could be induced to be vaccinated. The editor added that "they think the doctor is working up a system out of which to make money. . . . Proper precaution is indicated."

Among Dr. Viall's numerous medical contemporaries in the village were Lafayette Redmon, John A. Ross, Henry Jones, O. A. Case, George A. Love and, in the early eighties, J. H. Phillips. Dr. Viall was a member of the Universalist Church, a good and respected citizen, reliable in his professional work and in the conduct of his business interests. He was the owner of his home and of other real estate. Two of his outstanding characteristics were that he read widely, especially history, and that he always was well groomed and so smartly clothed as to be called dressy.

After fifteen years in Preston Dr. Viall died on September 23, 1885, of "paralysis of the brain," his son has stated. After his death Mrs. Viall, an intelligent and able woman who had always been interested in medical matters, took up midwifery and practical nursing and for several years served the community successfully as a skillful practitioner. Helen Gage Viall lived thirty-eight years after her husband's death and died in Preston on November 16, 1923.

In 1943, of Dr. Viall's immediate family there were living his sons, James Gage Viall, of Phoenix, Oregon, and Ralsy Edward Viall, of Granite City, Illinios, and their twelve grandchildren, several great-grandchildren and nieces and nephews.

P. Von Lackum, "physio-medical physician and surgeon," settled in Preston in December, 1869, and announced that he used no noxious substances whatever in his practice and claimed for his system of medicine more efficacy against disease than that of any other.

Early in 1871 there appeared at considerable length in the local *Republican* editorial versions of one of Dr. Von Lackum's cases that made most interesting reading. It seemed, on first account, that the practitioner was called to see a Norwegian girl, living at home in a neighboring community, who suffered greatly, her distress manifested by writhings and contortions; that the doctor decided that she had drunk water from a pond containing "wiggle-tails"; that the creatures subsequently had changed to frogs in great numbers within her stomach; that the doctor wished to open the stomach; that the parents of the girl refused the operation. After much speculation the reporter challenged science "to vindicate" if frogs actually were in the stomach, "by showing how they came to subsist there through the gradations from the diminutive wiggle-tail to a full grown croaker with propagating powers other than those

it would enjoy in the bogs and ponds in which it has, from time immemorial, given its delicate note to the night breeze." All was made clearer a few weeks later by the following communication from the patient's brother, published at the doctor's request: "I hereby certify that Dr. Von Lackum never said there was frogs in my sister's stomach. The doctor said that it might be a frog or a lizzard. The doctor never called other physicians for a consultation in this case and never said anything about operating on her. Dr. Von Lackum was called for consultation after the other physicians could not make out what her ailing was."

The editor added, regarding Dr. Von Lackum: "He also unhesitatingly affirms it as his belief that snakes, toads and lizards may subsist in the human stomach to the great discomfort of those who may become burdened with them, in view of which we reiterate the opinion that Dr. Von Lackum is in error and science must vindicate."

Evidence did not appear that this practitioner afforded further challenge to science. His professional cards were not noted by the writer in issues of local newspapers subsequent to March, 1872.

This absurdity is given because of its obvious significance. In Minnesota, as elsewhere, there were practitioners of sorts who prospered until adequate acts to regulate medical practice came into effect.

In 1874 there was residing in the city of Winona, Winona County, Dr. Peter Von Lackum (since said to have been a botanic physician and surgeon), who practiced there about four years. This man came from Germany and first settled in Minnesota in 1864, according to Andreas' *Historical Atlas* of 1874. It is probable, but unproved, that this man and the physio-medical physician and surgeon of Preston were the same.

Charles Carroll Walker was born in 1870 at Kilbourn City, Wisconsin, the son of Luzern Walker and Christiana McCumber Walker, both of whom were natives of New York. There were four other children, all boys, William E., L. T., F. H., and Raymond M. Walker.

Charles Walker obtained his early education in the schools of Kilbourn City. Immediately after his graduation from the local high school, in 1888, he had a year of academic and premedical work at Lawrence University, at Appleton, Wisconsin, and subsequently matriculated at the Northwestern University Medical School, from which he was graduated in 1896.

Licensed in Minnesota by examination, in 1896, Dr. Walker practiced two years in Winona before settling, in 1898, in Chatfield, Fillmore County. In 1900 he moved to Lamberton, Redwood County, where for the greater part of the last forty-three years he has been engaged in general medical practice. In the summer of 1906, then in Currie, Slayton County, he took a postgraduate course in Chicago before returning permanently to Lamberton. He is a member of the Methodist Church, has served on the city board of health, and in 1918, in World War I, was a captain in the Medical Corps of the United States Army.

On June 4, 1903, Charles Carroll Walker was married to Julia Cole, of Chatfield. In 1943, of Dr. and Mrs. Walker's three children, Charlotte was deceased, Kathryn was Mrs. W. J. Smith, of Denver, Colorado, and Harold E. Walker, of Duncan, Oklahoma, was in the United States Army.

(To be continued in March issue)

President's Letter

IT'S YOUR ASSOCIATION

The Minnesota State Medical Association, like any democratic body, can best fulfill its function and objectives if its individual members are all fully aware of the makeup and mode of operation of their representative group. The State Association is a federation of thirty-three county medical societies throughout the state, having a membership of more than 3,000 physicians. It is a constituent state unit of the American Medical Association.

The most important figure in the Association is not the president, but the individual practicing physician. He is the fundamental unit of the entire structure of organized medicine at all levels—national, state and local—for that is the way in which free men organize themselves democratically. Authority does not come from the top down; authority springs from the individual member, who through his county medical society makes his ideas and desires known.

The most potent force in the State Association is the local county medical society. Each local society elects delegates who in turn compose the House of Delegates. Supreme authority is vested in the House which meets annually at the time of the annual scientific meeting (unless called into special session). This body is presided over by an elected speaker. In addition, the House of Delegates elects a council, which in the interim has full power and authority. The Council consists of nine members—one member from each of the nine councilor districts plus six other *ex officio* members who may sit with the Council but who do not have the right to vote. These are the president, the immediate past president, the president-elect, the secretary, the treasurer and the speaker of the House of Delegates.

Association affairs are managed by a full-time executive secretary and his staff of assistants, with headquarters at 496 Lowry Medical Arts Building, Saint Paul. Your Association is to be complimented on having at the present time one of the finest executive secretaries in the country, and much of the success of the organization can be attributed to his diligent and untiring efforts. Every member should make a point of becoming acquainted with the executive secretary. His duties consist of carrying out the directions of the House of Delegates, the Council and the thirty-nine appointed scientific and economic committees.

The state office is working full time for the interest of the medical profession and furthering the activities of the Association and is anxious to give assistance in any way possible to any member who desires it. For example, the office maintains a speakers' library, material from which can be sent to physicians on request when they have been called upon to address a lay group and desire accurate up-to-date information to use in preparing a talk. The headquarters office keeps an alphabetical file of Minnesota physicians with whatever biographical data is available on each one. There is also a placement service for physicians seeking locations or looking for assistants or associates. Suggestions from members on how the program of the Minnesota State Medical Association can be improved or expanded are welcomed. Effort is

made to acknowledge all such communications promptly, and matters requiring consideration by the Council or a committee will immediately be referred to the proper group.

In addition, the Association maintains the services of a trained and skillful attorney, who is responsible to the Council and is actively engaged in handling the legal matters pertaining to the activities of the Association.

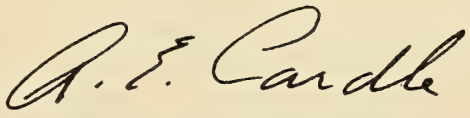
With his license to practice, with the approval of his fellows and with all of the qualifications for membership defined in the Constitution and By-Laws adequately met, a physician becomes a member of the medical society of the county or district in which he resides. This automatically makes him a member of the State Association. From that point it is his responsibility to keep his membership, to see that he gains the maximum amount of benefit from this membership and to make a genuine effort to contribute to the work of the organization. It should be the duty of each member to take a vital interest in the affairs of the State Association, for by so doing he has his best opportunity to keep abreast of medical developments and to improve his service to his patients and humanity. As a member of a scientific committee he can help educate the public in health matters in many different fields. By service on an economic committee he can help stimulate such activities as the extension of medical service in rural areas or see that sound health legislation is passed which will safeguard the health and welfare of the people of the state. A physician can also make valuable contribution by serving as a delegate from his society, as a Council member or as an Association officer.

The activities of the Association are many and varied. The annual scientific meeting attempts to provide its members with one of the best-rounded medical programs possible. Through Minnesota Medicine, the official journal, members have the opportunity of reading one of the finest state journals published. Not only does it provide scientific information, but also pertinent news on a national and local scale, to keep members posted on all current matters. A monthly news letter further augments this information. Every member should give his most careful attention to these if he wishes to contribute to the organization and derive the benefits it has to offer.

The Association also provides speakers and exhibits for lay gatherings; distributes sound, scientific health information to the press and radio; distributes literature and co-operates with and supplies professional advice and guidance to responsible official and voluntary agencies and organizations whose activities also lie in the health field.

It also provides members with an opportunity to join in organized action on matters pertinent to public health and medical practice, serving as a clearing house for information for members of the medical profession and, to some extent, the lay public as well.

The local societies and the State Association will be only as active, alert and effective as are the individual members. No member is too young or too old to serve, or to give his ideas on how the program of the Minnesota State Medical Association can be improved or expanded. Your interest and suggestions are essential to the success of the group. It's *your* Association.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

TRENDS IN MEDICAL PRACTICE

IT is sometimes possible to see certain trends in the practice of medicine. When such a trend is not a healthy one, attention should be called to it so that it can be corrected.

The average physician enters the practice of medicine because of interest in the science and art of medicine and because he has a certain altruistic desire to be of service to people. This is as it should be and should be the universal urge in selecting medicine as a vocation. One who selects medicine as a road to wealth is most likely doomed to disappointment. Only the very few acquire wealth in the practice of medicine. Those who do are likely to pay for their financial success in overwork and short lives.

On the other hand, the practice of medicine offers a good living to the industrious and serious minded physician. This is particularly true in the case of general practice, whether the young physician settles in the city or the country. With the present-day surge among recent medical-school graduates towards specialization, it can be safely predicted that a certain proportion of specialists who are for the most part located in the larger centers of population will be forced for economic reasons to shift to general practice in locations where they are needed.

While we do not decry the obvious need for specialization in medical practice and the desirability of certification of specialists by National Boards, specialization is being overdone. Greater financial compensation of certified specialists, obvious in government payrolls, has doubtless been the main factor in the overproducing of specialists. Government financing of GI's in enabling them to specialize, while possibly a temporary factor, accounts for the situation in some hospitals where there are two residents training for the specialties for every intern. The obvious remedy is the limitation of available residencies. We feel sorry for the young doctor who invests three to five years of training in a specialty when a year or two in preparing for general practice would have been the wiser choice. A few years of general practice enables the young doctor to know better what specialty to choose and, in our opinion, a general practitioner should be given preference in the filling of residencies. One who has been in general practice knows that there is more to a patient than that organ or organs with which he as a specialist deals.

One of the regrettable results of specialization is the frequent difficulty a sick and perhaps acutely ill person often has in obtaining prompt medical care even in a large city that boasts hundreds of doctors. The doctor called is a specialist, and from the description of the symptoms, the case is not in his line or he doesn't make house calls or night calls. Instead of having any feeling of responsibility as a member of the healing profession in seeing to it that the patient contacts a general practitioner who will respond to the call, he hangs up the receiver. What a simple matter for the specialist to have the names of several general practitioners to whom he can refer calls. Or are general practitioners already so scarce that he knows of none?

We talk about the need of improving our public relations and the need of contributing to the support of publicity agents who will extoll the accomplishments and virtues of the profession, when the very best public relations are established by the individual physician in his relations with the public. As someone has said, adherence to the Golden Rule by every member of the profession would obviate the need for any other public relations agency. Are we losing some of the idealism which has always been a part of medicine and has distinguished medicine as a profession in contradistinction to a business?

The laborer is worthy of his hire, but financial return should be secondary to service.

AMERICAN RED CROSS

IN March, the Red Cross will again collect funds to support its various relief activities. Americans gave generously to the Red Cross during the war and will doubtless continue to support

it in contributions of time and money during peacetimes.

During 1947 the Red Cross assisted the sufferers from the Texas City disaster with more than $1,000,000 and the September hurricane victims with an additional $1,000,000. During the first ten months of the year, a sum of over $9,500,000 was appropriated for the disaster sufferers. More than 2,000,000 cases involving veterans and their dependents were handled during the past year, involving nearly $12,000,000 in expenditures. In addition Red Cross personnel are making life brighter for inmates of veterans hospitals. Educational classes in first aid and the blood banks which are getting under way are other worthwhile activities of this famous organization. *Give!*

MEDICAL COSTS AND OTHERS

FRANK G. DICKINSON, Ph.D., Director of the Bureau of Medical Economic Research of the American Medical Association, has made an interesting analysis of medical costs in recent years in relation to certain other living costs. He divides medical costs into those for physicians' services, hospital and other medical costs. The costs of physicians' services include only those in private practice, and the hospital item includes only payments to proprietary hospitals and the operating expenses of nonprofit hospitals.

He shows that by 1945, the expenditures for physicians' services had increased over the average expenditures for the years 1935 to 1939 some 163 per cent; hospitals, 180 per cent; and total cost of medical care, 188 per cent. By comparison, expenditures for alcoholic beverages had increased over the same period, 248 per cent; recreation, 253 per cent; tobacco, 176 per cent; personal items, 229 per cent; and jewelry, 380 per cent. He shows that in comparison with expenditures for the items mentioned the amount spent for physicians' services has increased the least. Or to put it in dollars, the amount paid in billions for physicians' services increased from 0.8 for the basic period of 1935 to 1939, 1.3 in 1945; for hospitals, from 0.4 to 0.8; medical care from 2.6 to 5 billions. During the depression years, the cost of physicians' services, hospital care and total medical care took the highest percentages of the personal income that it has since 1929. This is to be expected, as the services of physicians and hospitals are in the nature of a necessity.

This finding of less fluctuation in the income of physicians as a whole, in comparison to other items, is in keeping with experience. Many physicians have not increased their fees at all, others only moderately, although the overhead cost in their practice has increased some, and, of course, their cost of living has about doubled, as it has for everyone else. Medical fees paid by insurance companies and for industrial work have remained stationary for the most part, and these rates set a standard to some extent for private practice.

The following figures are of interest. The total consumer expenditures of 143.7 billions in 1946 were approximately double the figure of 72.1 billions in 1940. This includes 8.8 billions spent in 1946 for alcoholic beverages as compared with 3.6 billions in 1940; 7.9 billions for recreation in 1946 compared with 3.7 billions in 1940; 5.6 billions for total medical care in 1946 compared with 3.1 billions in 1940; 1.4 billions for jewelry in 1946 compared with 0.5 billions in 1940; all this compared with 1.5 billions spent for religious *and* welfare activities in 1946 compared with 1 billion spent in 1940.

These figures do not mean that we as a nation are drinking twice as much alcoholic beverages as six years ago. Much of this item is due to high cost of production and higher taxes. They do not suggest, however, that we are drinking any less. We apparently must have our liquor whatever the cost. To spend nearly six times as much for liquor, five times as much for recreation and nearly as much for jewelry as we spend for religious and welfare activities combined does not speak well for our ideas of relative importance.

As Dickinson says: "Medical care is expensive; it is becoming more expensive; yet as a percentage of national income in a period of frenzied prosperity, it is a shrinking item. Medical care is expensive, but patients are getting more for their money in terms of longer life."

THE MINNESOTA CANCER CONTROL PROGRAM

AS Minnesota physicians are aware, never before in history have such extensive and well-planned efforts been directed at seeking the cause and cure of any disease as are now being leveled at cancer. In Minnesota, the cancer program has recently been expanded by setting up, in the State Department of Health, a Division of Cancer Con-

trol, established when federal cancer funds were made available to state health departments in 1945.

Despite the fact that large sums of money are being spent on cancer research and many highly skilled persons are diligently seeking for clues to a solution of the problem of cancer, we still have to rely on time-tested, though none too satisfactory, procedures for treating cancer. Prevention is still a hope for the future. Early detection and early, adequate treatment are the only measures that offer real hope at present of reducing our high cancer mortality.

Definite progress has been made toward early detection through educating the lay public to be on the alert for early signs of cancer and to report such signs promptly to their physicians. But that is only the first step. The second step, equally important, consists of providing prompt and effective treatment. That step must, of course, be taken by physicians themselves. They must be ready and able to apply all measures necessary to determine if cancer is present. This they can do only if proper facilities for examination are available, including special training for the physician if necessary. If prompt diagnosis is made, then early treatment will follow as a matter of course.

In co-operation with the Cancer Committee of the Minnesota State Medical Association and the Minnesota Division of the American Cancer Society, the Minnesota Department of Health is now setting up a program that will aim to meet the requests of physicians for greater knowledge concerning cancer. This program will undertake to provide:

1. Educational opportunities for graduate students in cancer
2. Refresher courses on cancer for practicing physicians
3. Speakers on cancer control for meetings of medical societies and hospital staff meetings
4. A correspondence consultation service for physicians

The Cancer Control Division of the Health Department is also undertaking, through hospital reporting of cancer cases, a statewide statistical study of the incidence and distribution of cancer. The information gained from this study will be made available to physicians as rapidly as significant data are accumulated.

DEAN S. FLEMING, M.D., M.P.H.

Dr. Fleming is Chief of the Section of Preventable Diseases, Minnesota State Department of Health.

MEDICAL MOTION PICTURES

IT is not generally known that the Committee on Medical Motion Pictures of the American Medical Association has some 4,000 motion pictures available gratis, except for transportation charges, for use at medical meetings—hospital staff, county or state. About 50 per cent of them are sound pictures, most of them on the postgraduate level. The service was organized in 1945, reviews of new acquisitions appear in the A.M.A. Journal, and a catalogue is available for use in selection of the subject desired. At present, most films presented at medical meetings are those furnished by pharmaceutical houses. Society secretaries interested in securing the AMA pictures should write Mr. Ralph Creer, Secretary of the Committee on Medical Motion Pictures at A.M.A. headquarters, 535 North Dearborn Street, Chicago 10, Illinois.

RESEARCH PROJECT ON CARDIOVASCULAR DEGENERATION

The Laboratory of Physiological Hygiene of the University of Minnesota's School of Public Health is undertaking a long-term study of physiological factors involved in human cardiovascular degeneration (arteriosclerosis and hypertension). Special attention is being given to the effects of dietary and activity habits, and efforts are being made to include some evaluation of personality characteristics. This project is sponsored by the U. S. Public Health Service, acting on the recommendation of their cardiovascular advisory committee (Dr. W. Cowles Andrus, chairman). The program has been endorsed by the Heart Committee and the Council of the State Medical Association and the Ramsey and Hennepin County Medical Societies.

A major part of the program consists of systematic periodic examinations and tests of men who are "normal" at the time of their first examination. In a total of 500 men who are participating approximately 200 are University students (eighteen to twenty-six years of age) and the remainder are businessmen recruited from the Twin City area whose ages are forty-five to fifty-four, inclusive.

The examination, which takes about four hours, includes the following items: (1) special history and physical examination, designed to reveal cardiovascular abnormalities; (2) electrocardiogram (4 leads); (3) X-ray and fluoroscopy of the chest; (4) hemoglobin estimation; (5) serum cholesterol determination; (6) urinalysis; (7) estimation of peripheral circulatory impairment by reactive hyperemia; (8) pulse wave velocity (an index of the elasticity of the general arterial tree); (9) studies on the response of blood pressure to light exercise, to cold (cold pressor test) and to 6 per cent carbondioxide inhalation; (10) estimation of the fat content of the body by the densitometric method; (11) an-

thropometric measurements of skeletal size and of skin fold thickness in standard locations; (12) personaltiy evaluation (Minnesota Multiphasic test); (13) activity and dietary history.

It is planned to administer this battery of tests once a year to the volunteers for five consecutive years. After this time, status of these men will be checked by the usual follow-up methods for an additional five years. At this time an effort will be made to have all the available men undergo a physical examination to obtain their status in terms of current medical practice. It is expected that it will be possible to correlate the several biochemical, physiological and psychological measurements and the relevant items in the activity and dietary history with the subsequent development of arteriosclerotic and hypertensive cardiovascular disease in these men. It is hoped that from this work it will prove possible to identify the persons who are more than usually likely to have trouble in this respect, to discover factors in the mode of life which are predisposing and to provide indications for a preventive hygiene.

In addition to the long range studies described above a large number of experimental studies on other subjects and patients will be made to develop methods, test hypotheses and to provide validating criteria. Current activities in this part of the program include systematic researches on reactive hyperemia, on cholesterol metabolism, on the estimation of body volume, on renal blood flow in rest and work, on personality and emotion in relation to circulatory function with special emphasis on vasomotor instability and on exercise in hypertensive patients.

This program is being operated by the Senior Staff of the Laboratory of Physiological Hygiene: Drs. Ernst Simonson, Olaf Mickelsen, Austin Henschel, Henry Longstreet Taylor, Josef Brozek and Carleton Chapman and the Director, Dr. Ancel Keys. Part time associates in this program include representatives from the Departments of Medicine and Neuropsychiatry. The organization of the operating personnel in this project is based on the concept of interdisciplinary research. The team which is operating this program brings to bear on this major problem the skills and knowledge derived from the following disciplines: biochemistry, physiology, psychology, medicine and psychiatry. It is felt that only through the co-ordinated efforts of a number of specialists can a well-rounded solution of such a complex problem be achieved.

Every effort is being made by the investigators to work with the members of the local medical profession. There is no intent on the part of the Staff of providing medical care or advice to any of the men participating. In each case, the physician is notified that his patient has volunteered for this experimental program. It is emphasized to the participants that this data is being collected for scientific purposes only. If any abnormalities are found, the information is transmitted to the personal physician of the participant and the participant is told to consult his physician for advice and treatment. All findings and data are available to the personal physicians of the subjects.

HENRY L. TAYLOR, M.D.

MINNEAPOLIS HEALTH STATISTICS

A new all time high for births occurring in Minneapolis was set in 1947 with a total of 17,549, Dr. F. J. Hill, Commissioner of Health, reported today. The next highest record was in 1946 with 15,682 births. The total for 1947 includes 4,928 babies born to non-resident mothers compared with 4,169 in 1946. Though the monthly reports of births started a downward trend last August, the total for the year remained the highest on record. Boys continue to arrive more often than girls. In 1947 there were 855 more boys than girls born.

Even with over 17,000 babies being born during 1947, the city experienced outstanding low rates for infant mortality and deaths of mothers in childbirth with 25.7 per 1,000 live births and 0.5 respectively compared to 26.6 and 0.7 in 1946. "These are signs of good community health" stated Dr. Hill. Prematurity is the leading cause of death of infants under the age of one year, and particularly in the first month of life.

Deaths from all causes among residents increased slightly, being 4,657 in 1947 as compared to 4,473 in 1946. The over-all death rate was 9.1 per 1,000 population compared to 8.8 in 1946.

The preliminary figures show no change in ranking of the ten leading causes of death as compared to 1946 with the exception of tuberculosis and nephritis which exchanged positions, namely 9th place for tuberculosis and 10th for nephritis. Heart disease, cancer, apoplexy, diabetes, and nephritis continue to account largely for increase in the total number of deaths from all causes during the year. With the percentage of our population over 45 years of age increasing annually, we anticipate a higher death rate from degenerative diseases.

The incidence of certain communicable diseases increased in 1947, but there were no major epidemics as in 1946 with poliomyelitis. Whooping cough with 534 cases resulted in one death compared to 52 cases and no deaths in 1946; measles with 2,107 cases with one resident death compared to 410 cases and no deaths in 1946.

Considerable progress was made in diphtheria control during the past year with a reduction in deaths from 7 to 1 in 1946 and 1947, respectively. The drop from 110 cases of diphtheria to 58 was also noteworthy but still unenviable since the disease has been even more successefully controlled in other communities. Investigation of cases reveal that preventive "shots" had not been arranged for by parents.

As predicted during the polio epidemic in 1946 that there would be few cases in 1947, we had only 21 resident cases and 3 deaths in 1947 as compared to 763 resident cases and 47 deaths in 1946.

The increase in the number of reported cases of tuberculosis is largely attributed to an outgrowth of the Community-wide Chest X-ray Survey. The 1,022 reported cases of tuberculosis in 1947 as compared to 615 in 1946 reflects this intensified case-finding program. The increase in the tuberculosis death rate from 18.3 per 100,000 population to 20.5 in 1947 cannot be explained without a study of many factors. Because of the intensified case-finding program and the number of sus-

(Continued on Page 188)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

MEDICINE'S RECORD IS ANSWER TO TRUMAN PLEA

When, as was expected, President Truman's State-of-the-Union address to Congress on January 7 contained another plea that something be done to fill the "gap in our social security structure" created by the "lack of provision for the nation's health," the medical profession already had an answer—one recorded not in words but in positive action.

This answer was reviewed by the House of Delegates at the Cleveland interim session in January. It consists of a detailed progress report, prepared by the Board of Trustees of the American Medical Association, on what has been done toward achieving the objectives of the Association's ten-point national health program. The simple and unmistakable conclusion from the report is this—*a lot has been done!*

Briefly, the major accomplishments of the medical profession have been along the lines of extension of prepayment programs, both medical and hospital; continual advancement of scientific research; intensive public health education; support for needed and well-founded health legislation; and co-operation with responsible groups in an all-out effort to extend high quality medical and health care to all people.

Again Demands National Program

Recognizing that American medical standards are high, President Truman repeated the oft-heard contention that "most of our people cannot afford to pay for the care they need."

"I have often and strongly urged that this condition demands a national health program," said Mr. Truman. "The heart of the program must be a national system of payment for medical care based on well-tried insurance principles. This great nation cannot afford to allow its citizens to suffer needlessly from the lack of proper medical care." Conspicuously absent from the presidential message was the word "compulsory." However, there is not the slightest evidence that Mr. Truman has changed his mind on compulsory sickness insurance, federally administered, as his solution to national health problems. At any rate, compulsion is not consistent with the American ideals of freedom which Mr. Truman says he wishes to see maintained. The medical needs of the American people are far more effectively met on a local community and state basis rather than by a system centrally controlled. The ideals of freedom are better protected on that basis also.

One in Three Now Protected

Mr. Truman neglected to mention that many millions of Americans are already protected against the costs of hospitalization and sickness by the Blue Cross Plans, the physician-sponsored voluntary plans for paying the costs of medical care and the contracts sold by long-established private insurance companies. Already the American people are well on the way toward meeting the President's standard of "a national system of payment for medical care based on well-tried insurance principles."

As of December, 1947, the latest date for which there are figures, about *one American in every three* had some form of insurance against sickness costs. A study conducted by the National Industrial Conference Board has revealed that at the end of 1947 total enrollments in voluntary plans — commercial and physician-sponsored, group and individual—topped the 61 million mark. Some duplication exists, the study showed, as for example the medical plans often require subscribers to purchase Blue Cross contracts along with medical coverage; but the above figure was reached with a liberal allowance for such overlapping. It was the conclusion of the Conference Board that so much attention has been diverted to socialized medicine that the phenomenal expansion of voluntary health protection has been overlooked. President Truman might well take note

that his request for "some kind of national health program" is already being filled—the voluntary way.

Welfare Department Idea Reappears

The idea of having a new department in the federal government to look after the welfare of the population cropped up again in the President's address. Physicians will recall that last February the Taft-Fulbright bill (S.141) to create a Department of Health, Education and Security was introduced in the Senate. This bill outlined the very thing President Truman had reference to when he said: "The government's program for health, education and security are of such great importance to our Democracy that we should now establish an executive department for their administration."

The plan to set up such a department did not fare too well in the last Congress, however; and what the President's chances are of seeing his present request filled during the coming year is not known.

S.141, advocating the three-cornered departmentment, was referred to the Senate Committee on Expenditures in the Executive Departments, where it languished for over a month. Opposition was expressed by the American Medical and Dental Associations and other organizations; hearings were concluded with the bill failing to be reported out of Committee.

Object to Third Party

The medical profession's objection to a Health, Education and Security Department stems from its creation of a third party between the medical profession and the President. The plan would create a Secretary of Health, Education and Security, under whom there would be three undersecretaries, one for each of the three major divisions. The handicaps under which an Under-Secretary of Health would have to operate are obvious. For example, he could get no action directly from the Chief Executive; he would have to discuss health and medical programs, legislation and policy with the President through an intermediary—someone, perhaps, from the welfare or social insurance fields.

For many years the medical profession has favored assembling and co-ordinating all health functions of our national government in a single agency with an administrative head in the Presidential cabinet. The profession does *not* favor combining health, education and security in one department if it means subordinating health matters and forcing medicine to play a subsidiary role. If health is, as many statesmen have declared, a primary consideration of government, then it should warrant a separate department with the distinction of cabinet rank for its chief.

AMA Working to Obtain Objectives

The genuine effort of the American Medical Association to "get its ten-point program off the printed page and into actual practice," as it was outlined to the House of Delegates at Cleveland, stands as the best possible refutation of the claims made by Mr. Truman and others which create the impression that America is in dire straits, medically speaking.

The ten-point program of the AMA is a restatement of a fourteen-point program officially adopted in June, 1945. It has been offered as organized medicine's solution to the national health problem; in it the basic health needs of this nation are clearly outlined and the methods whereby these needs may be met are advanced.

Diametrically opposed to regimentation or any form of totalitarianism, the medical profession suggests the following as fundamental to good health: (1) minimum standards of nutrition, housing, clothing and recreation; (2) provision of preventive medical services through professionally competent health departments; (3) availability of procedures established by modern medicine for advice to the prospective mother and adequate care in childbirth; (4) proper attention including scientific nutrition, immunization and other services included in infant welfare for all children; (5) provision of health and diagnostic centers and hospitals necessary to community needs; (6) establishment of voluntary non-profit, prepayment plans for meeting costs of hospitalization and medical care; (7) high-type medical care for all veterans, preferably by a physician of their own choice, with payment by the government in cases where disabilities are service-connected; (8) research for advancement of medical science with endorsement of a National Science Foundation; (9) encouragement of participation in national health program of volunteer philanthropic health agencies; and (10) promotion of public health by widespread education and dissemination of information regarding prevention of disease and its proper treatment.

Pioneers in Health Education

In implementing the ten-point program, the American Medical Association has literally spared no efforts. For example, a look at the health education program which it carries on will bear this out. A pioneer in the field of public health education, the AMA is continually expanding and augmenting its program and utilizing all communication media—radio, newspapers, magazines, the speakers' platform, pamphlets, books, motion pictures, personal correspondence—and lately, television.

In addition the Association sponsors conferences, lends its personnel and members to other agencies and organizations as consultants or advisors or committee members, provides scientific exhibits for organizations requesting them. At present the AMA is actively co-operating with over thirty national agencies and organizations and its members serve on some twelve national committees. The AMA publishes articles on health and fitness in ten periodicals, including its own publication, *Hygeia;* answers an average of 2,500 letters a year on health problems; and issues health releases to about 2,000 periodicals and newspapers. Literally millions of books and pamphlets on health have been published by the AMA. Extension of education in health to schools in every grade and recognition of health education as a subject to be assigned for credit has also been urged.

A special campaign waged by the AMA has been its constant emphasis on the importance of the periodic health examination. It publishes a standard manual in this field and furnishes examination blanks; it employs every editorial channel available to promote recognition of the value of the periodic physical to preventive medicine.

Conducts Surveys, Promotes Research

Two other activities which medicine has undertaken and which are yielding results are the many surveys which are financed by AMA funds and the scientific research programs which it encourages and frequently sponsors.

One important survey to which the AMA is lending constant support is the hospital survey provided for in the Hill-Burton Hospital Survey and Construction Act. The AMA has directly sponsored several surveys in order to promote the extension of medical care in rural communities. With the co-operation of state and county medical societies it has surveyed the medical facilities and medical personnel in every county in the United States and has made the information obtained available to all medical schools and to all hospitals approved for internships and residencies for the purpose of helping young physicians choose locations for practice.

A study of medical schools in 1947 revealed that many have preceptorships with rural physicians for medical students in their senior year, scholarships for students who will practice in rural areas and many other plans for interesting younger men in rural practice.

An interesting two-part study on the utilization of medical facilities and personnel during an emergency was recently carried out. Phase One investigated medical services on the home front. Questionnaires were sent to physicians who remained home during the war. (While sixty per cent of practicing physicians carried 91 per cent of the pre-war patient load, it was found that 1942, the first year of heavy inductions, was the healthiest in U.S. history, up to that time.) Results of the study will be used to determine how even better results may be obtained in the event of another national emergency. The second phase of the survey was conducted among the returned medical officers to determine how medical personnel was utilized by the armed services. The study summarizes opinions and constructive criticisms made by the nation's wartime medical officers. Results will be of value to the Department of National Defense in planning medical policies for future use in the entire national defense establishment in peace and in war.

Other surveys undertaken by the AMA include one on the cost of medical care, one on the distribution of physicians and supply of medical services and one on the implications of group practice.

AMA Has Testing Laboratory

One of the important services which the AMA performs for the direct benefit of the public and for which it is well known is the examination of foods, drugs and various other products and devices. It maintains a laboratory to test preparations submitted for consideration and places its famous seal of approval on those which meet its rigid standards.

Not only does the AMA carry out such tests but it also is concerned with the development of

new tests and standards by which products can be identified and controlled. Practically everything which the AMA does encourages research or the use of knowledge gained from research. Through its scientific publications the results of research are published. Current research projects are listed periodically in the *Quarterly Cumulative Index Medicus,* put out by the AMA. The Association has created three special committees which have medical research functions. One attempts to co-ordinate and arrange research projects and the others make available funds for research purposes. In 1947 the AMA established a trust fund of $1,500,000, the interest from which will be used each year to support medical research. In all of its activities, the AMA works to advance the health standards in this country. It is in the hope that American Medicine will always maintain its enviable record that the medical profession through its national organization guards jealously our system of freedom of enterprise, which is the only system under which medicine can hope to exist or advance.

COUNCIL APPOINTS COMMITTEE TO REVISE MSMA CONSTITUTION

At its December meeting, the Council of the Minnesota State Medical Association appointed a four-man committee to undertake a study of the Association's Constitution and By-Laws.

The old Constitution, adopted by the House of Delegates in 1937, is still basically sound; it lays down a set of fundamental principles which embody the ideals of medicine and medical organization. However, it has been brought to the Council's attention that certain difficulties and inconsistencies have been encountered which indicate that the Association has outgrown some of the methods employed in medical organization at the time the Constitution was first drafted. Therefore, it was decided that a careful examination should be made of the present framework to determine what practices are now outmoded and to decide where revisions should be made.

Appointed to undertake the project are Dr. O. J. Campbell, Minneapolis, who will serve as the chairman of the committee, Drs. C. B. Drake and B. B. Souster, St. Paul, with Mr. F. Manley Brist, Association attorney, as legal counsel. The group will study the present Constitution and By-Laws thoroughly, formulate the needed revisions and submit them to the House of Delegates for final approval.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Minneapolis Man and Woman Sentenced for Criminal Abortion

Re. State of Minnesota vs. Vern E. Jorgensen and Lillian Mullane.

On February 5, 1948, Vern E. Jorgensen, thirty-five years of age, 4036 Zenith Avenue North, Minneapolis, and Mrs. Lillian Mullane, fifty years of age, 4407 Portland Avenue, Minneapolis, were sentenced by the Hon. Frank E. Reed, Judge of the District Court of Hennepin County, following their respective pleas of guilty on November 10, 1947, to an information charging them, jointly, with the crime of abortion. Jorgensen was sentenced to a term of not to exceed four years in the State Prison at Stillwater, the sentence being stayed and the defendant placed on probation for a period of five years. Mrs. Mullane was sentenced to a term of two to eight years in the Women's Reformatory at Shakopee, the sentence being stayed and the defendant placed on probation for five years, provided, however, that Mrs. Mullane must serve the first year of her sentence in the Minneapolis Women's Detention Home. Mrs. Mullane's sentence was doubled because of the fact that on October 8, 1924, she was convicted of grand larceny in the second degree in the District Court of McLeod County, Minnesota.

The defendant Jorgensen, who posed for several months in Minneapolis as "Dr. Vern Roberts," and the defendant Mullane, were arrested on a complaint issued October 18, 1947, in the Municipal Court of Minneapolis charging both, jointly, with performing a criminal abortion on a thirty-five-year-old married woman. The abortion was done by the defendant Jorgensen at the home of the defendant Mullane by means of a catheter. Jorgenson was paid $160 for his services. Jorgensen admitted that he had been posing as a doctor and that he had performed approximately 100 criminal abortions during the past three or four years. Jorgensen is a son of Mrs. Anna D. Huff, who on May 17, 1943, entered a plea of guilty in the District Court of Ramsey County to an information charging her with the crime of manslaughter following a criminal abortion. For that crime Mrs. Huff was sentenced to a term of five years in the Women's Reformatory at Shakopee, which sentence she served. The defendant Mullane has a long criminal record consisting of five convictions for shoplifting in Minneapolis and St. Paul. She also has two previous convictions for the illegal sale and possession of liquor, one in 1926 and one in 1929, in addition to the larceny conviction in the District Court of McLeod County.

The Minnesota State Board of Medical Examiners wishes to acknowledge the very fine co-operation received from the Minneapolis Police Department in the investigation of this case and from the Hennepin County Attorney's office in the presentation of the matter in Court. The Medical Board also believes that the sentence imposed by Judge Reed will convince the defendant Mullane that she cannot shift her operations from shoplifting to being an accomplice of an abortionist. Judge Reed warned the defendant Jorgensen that he was receiving probation because he did not have a previous conviction for a felony and that if any complaint is made about his activities during the next four years, and the facts support the complaint, Jorgensen would be taken to Stillwater to serve his entire sentence.

Minnesota Academy of Medicine

Meeting of October 8, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 8, 1947. Dinner was served at 7:00 o'clock, and the meeting was called to order at 8:00 p.m. by the president, Dr. E. M. Hammes.

There were fifty-five members present.

Dr. Carl B. Drake read the following memorial to Dr. William Davis, and a motion was carried that it be placed on the records of the Academy and a copy sent to the family of Dr. Davis.

WILLIAM DAVIS, 1853-1947

Dr. William Davis, the last surviving charter member of the Minnesota Academy of Medicine, passed away on May 9, 1947, at the age of ninety-three. He had practiced fifty-six years before his retirement on April 30, 1939.

Dr. Davis was born in Plymouth, Massachusetts, September 28, 1853, the ninth lineal descendant of his Pilgrim ancestors to be born in that historic town. He attended Phillips Exeter Academy before receiving his B.A. degree from Harvard College in 1876 and his M.D. from Harvard Medical School in 1879. He served a three months' internship at the McLean Lying-In Hospital in Boston and spent a year in Vienna in postgraduate study.

After practicing in Syracuse, New York, for three years, Dr. Davis moved to Saint Paul in 1883, the same year joining the Ramsey County Medical Society. He was president of his county society in 1892, president of the Minnesota State Medical Association in 1901, and a member of the Minnesota State Board of Medical Examiners from 1900 until 1906.

Dr. Davis was interested in early medical publications, having been editor of the *Northwestern Lancet* from October, 1886, until December, 1899, and on the Editing and Publishing Committee of the *Saint Paul Medical Journal* from 1901 until 1912.

The Minnesota Academy of Medicine was founded October 12, 1887. Dr. Davis' first paper before the Academy was on October 9, 1894, on the subject of "Movable Kidney." This was published in the *Northwestern Lancet* (vol. 14, p. 478). He was elected president of the Academy on October 7, 1903, and gave his presidential address the following month (as was then the custom) at the meeting of November 4, 1903, on "Unusual Sources of Poisoning." This contribution was published in the *Saint Paul Medical Journal* in 1904 (vol. 6, p. 34).

At the meeting of February 10, 1932, Dr. Davis presented to the Academy the original copy of the minutes of the first meeting of the Academy which were decorated with original drawings by Dr. E. C. Spencer of Saint Paul, who was then secretary, and the page was bound in the Proceedings of the Academy for that year.

Dr. Davis married Sally White Holyoke on June 26, 1878. They celebrated their golden wedding in 1928 at their summer home at South Orleans, Massachusetts, surrounded by family and friends. Mrs. Davis died in 1929. He is survived by four children, fourteen grandchildren and twenty-two great grandchildren, one grandson having been killed in World War II.

Dr. Davis built a summer home at South Orleans in 1907 and spent his summers there yearly until 1942. His summer home proved a Mecca for friends visiting in the East and was continuously filled with members of his family.

He was a member of Unity Church in Saint Paul and for many years belonged to the Informal Club. He was fond of bridge and played a keen game until he was invalided as a result of a fractured hip in November, 1945.

Dr. Davis was an esteemed member of the medical profession and of the Minnesota Academy of Medicine. His was a life rich in service and friends.

The scientific program followed.

Dr. Stanley Maxeiner, Minneapolis, read his inaugural thesis which follows. Colored motion pictures were shown.

THE TOURNIQUET AMPUTATION

STANLEY R. MAXEINER, M.D., F.A.C.S.
Clinical Associate Professor of Surgery, University of Minnesota
Minneapolis, Minnesota

Tourniquets have been applied for centuries for the control of hemorrhage. Heliodorus,[3] in the second century A.D., referred to its use in the control of bleeding during amputation of the extremities, and many types of tourniquets have since been devised to suit the purpose for which they were intended. In all of these applications, compression was used for the sole purpose of controlling bleeding until surgery could be instituted, either by ligation or amputation. We have found no record in the literature previous to 1924 of case reports in which the tourniquet was applied for the purpose of limiting infection. At that time R. E. Farr,[2] with whom I was associated, reported three cases before the Minnesota Academy of Medicine. One case of gas gangrene of his own and one of the writer's, so treated, survived almost overwhelming infection. The third patient, also similarly treated for virulent infection superimposed upon arteriosclerotic gangrene in the presence of cardiac decompensation, expired from cerebral thrombosis after five days. The extremities were wrapped in

Inaugural thesis.

formaldehyde solution distal to the tourniquet and encased in a rubber envelope.

We have now treated more than twenty patients by this method, which we have modified and improved from time to time. The first decision, and perhaps the most important one to be made, is that the damage to the extremity is irreparable and that it must be sacrificed. Secondly, in the very bad-risk patient in whom a primary classical amputation would probably be fatal, the tourniquet is applied as an expedient in the hope of saving life. Later, the second stage may be completed either according to our technique or, when the general condition of the patient will permit, by performing a classical amputation.

In 1924 the author started using as a tourniquet about 5 feet of one-half inch pure gum rubber tubing, which is stretched very tightly and remains tight as it cuts deeply into the tissues. Pain is usually minimal, as the pressure from the rubber tubing produces anesthesia of such degree that only moderate sedation is required.

Much has been written in recent years about refrigeration for anesthesia and for the preservation of tissue of impaired vitality. Refrigeration has been used with and without the tourniquet, but we have continued to use formaldehyde solution because of the simplicity of its use and the fact that when the part is encased in rubber the process is odorless. We have repeatedly cared for patients so treated in large wards. Recently we used our technique in a Sisters' hospital where the leg had been treated for days by refrigeration. The contrast was convincing when they no longer had to carry pails of ice and water.

The writer served in the armed forces in the first World War and is convinced that many lives could have been saved by the sacrifice of an extremity by the tourniquet technique. We have so treated several patients whose extremities, one or more, had been traumatized so severely that amputation was inevitable. It is truly amazing to observe the minimal systemic reaction, the absence of shock, and often the almost immediate improvement following the institution of this procedure. In 1941 I published an article on, "The Temporary Tourniquet Amputation"[4] in which I stated, "During a recent trip south I saw an article in the San Antonio paper to the effect that an airplane pilot had crashed and sustained such a mutilating injury to both legs that double amputation was necessary. The article further stated that the pilot promptly died following the shock of the accident and the operation." We firmly believe that in war or peace, and especially in industrial and traffic accidents, the tourniquet technique affords a temporary expedient, a procedure of minimal severity, at a time when definitive surgery would be hazardous. The tourniquet may be left on for days, and the rubber tubing will complete a guillotine operation without shock, or a secondary elective operation may be performed at an optimum time. Major Paul Adolph,[1] in an article entitled, "Preoperative Measures Used in War Surgery in China: With Special Reference to the Delimiting Tourniquet," states that they used the tourniquet to obtain preoperative improvement before amputation, in the severely toxic patient who may have been lying out on the battlefield for two to three days. The lives of Chinese soldiers, whose extremities were badly mutilated and infected, were saved when the delimiting tourniquet was employed.

Indications

There must be the necessity for an amputation as a life-saving procedure in the presence of forbidding surgical risk. These indications exist in the presence of (1) severe trauma with irreparable damage to an extremity of a patient who is suffering severe shock from the loss of blood or the magnitude of his injuries, (2) virulent infections, especially gas gangrene, and (3) gangrene due to diseased peripheral circulation with superimposed infection or concomitant diabetes or critical heart disease.

Necessary Equipment

Pure gum rubber tubing, five feet.
White cotton, sterile, one roll.
Dental rubber dam, sterile.
New rubber draw sheet, one.
Formaldehyde solution, 10 per cent, one gallon.
Roller bandage, 4-inch, one.

Technique

The procedure may be employed either in the operating room or in the patient's bed. The latter has been found to be a decided advantage in critically ill patients with gangrene complicating diabetes or heart disease. We have repeatedly found intravenous morphine or intravenous morphine and scopolamine to furnish adequate anesthesia. Likewise, pentothal sodium has been very satisfactory.

The skin of the extremity is first painted with antiseptic solution several inches above and below the site of application of the tourniquet. The dental rubber dam or a strip of pure gum rubber, 6 to 8 inches wide and long enough to encircle the extremity and overlap a few inches, is placed so that its lower border is at the site of amputation. Next, the rubber tubing is tightly stretched and wrapped about the site of amputation just including the lower border of the rubber dam. Each turn of the tubing overlaps the one below so that the constricted area is as narrow as possible. The ends of the tubing are secured by taping together firmly so that they cannot possibly slip. The extremity distal to the tourniquet is next wrapped with a goodly quantity of white cotton. It is well to use the cotton in abundance. The new rubber draw sheet is next applied so that the extremity may be securely enclosed. The cotton is next saturated with about two quarts of formaldehyde solution, and the closure in the rubber sheet is completed and held fast with the 4-inch bandage. The rubber dam is next turned distally, sealing the upper opening of the wrapped sheet, and held securely by a few laps of the bandage. By this means, the extremity below the tourniquet is preserved in a laboratory solution which renders the gangrenous part odorless, nor is there any odor from the formaldehyde. We have repeatedly cared for these patients in wards without complaint.

Postoperative Care

General supportive treatment may be carried out as usual. Transfusions and infusions may be used as desired, and likewise, antibiotics if indicated. There is no interference with the routine treatment for the patient's shock, his diabetes or his heart disease. Mild sedation is usually adequate since, in only a few hours, the gradual compression of the tourniquet produces pressure anesthesia. This feature has almost been the rule although one or two patients have required greater amounts of sedation.

Usually once daily the rubber envelope is opened slightly and one to two pints of formaldehyde added to assure against odor from the gangrenous part.

Secondary Procedures

After the tourniquet has been applied and supportive treatment instituted, the condition of the patient may improve to such a degree that the surgical risk is lessened. Two alternatives present:

1. A classical amputation may be done, with flaps fashioned above the tourniquet. This is particularly applicable to crushing injuries not accompanied by severe debilitating disease. Naturally, it is the more rapid and the more ideal method of producing a definitive stump in selected cases.

2. The continued action of the elastic rubber tubing for eight to ten days will compress a groove through all the soft tissues to the bone. There remains only a hard dry cuff over the bone, completely free of sensation. As a result, a Gigli wire saw may be placed in this groove immediately above the tourniquet and the remaining tissue and bone cut across without anesthesia. The result is a guillotine operation. Usually the skin edge and layer of muscle eventually separate due to the crushing. Occasionally, at this time we divide the bone several inches higher under local anesthesia and use adhesive traction to pull the soft tissues together. One may choose, however, to dress the stump aseptically and, at a later date, perform a plastic operation, removing adequate amounts of bone and muscle to permit the skin edges to be approximated loosely by through-and-through sutures. Though more time consuming, this latter procedure will permit the saving of life in a larger number of amputations complicated by sepsis and severe debilitating disease.

Mortality

This procedure is an expedient made available to the critically ill patient in whom the classical operation of choice would be too hazardous. The application of the tourniquet and dressings produce no shock. In no patient have we observed any direct adverse symptoms. No deaths, I believe, can be attributed directly to the procedure when followed as described. One death occurred during anesthesia for severing of the painless compressed bed of the tourniquet. Most deaths have been due to the debilitating disease from which the patient suffered. Some who survived are, we believe, definite salvage attributable to the method.

Early in our experience we always had another tourniquet ready for possible secondary hemorrhage, but none has ever occurred.

Statistics of the twenty cases reported indicate there have been six deaths, or a mortality of 30 per cent, and, as stated, none of them can be attributed to the method.

Case Reports

Cases 1 and 2 are briefs of two case reports by Dr. R. E. Farr before the Minnesota Academy of Medicine February 13, 1924, and published in the *Annals of Surgery*, 79:913-916, 1924.

Case 1.—Robert, aged sixteen, had his left arm run over by a truck on March 19, 1923. Two days later he was referred to Dr. R. E. Farr by Dr. E. S. Geist. The boy was in critical condition, with his temperature 102° and pulse 120. Hemoglobin was 28 per cent. He had a gas gangrene involving his whole arm and shoulder. Multiple incisions were made over the shoulder and a tourniquet applied to the arm. The patient recovered.

Case 2.—Mrs. S. K. was seen by Dr. Farr on June 6, 1923. She had had a cerebral accident and developed gangrene of the left lower extremity. Palliative treatment was of no avail, and a tourniquet was applied. Five days later the amputation was completed. Six days later the patient succumbed to a terminal cerebral accident.

Case 3.—A young male adult, while reaching across a circle saw, severed most of the tissues just distal to the axilla. When seen at the end of forty-eight hours he was in extremely critical condition; his temperature was 102°, his pulse 120, and practically the entire arm below the injury was infected with gas bacillus. The skin was dark, there were no pulsations and no sensation. The general condition of this patient was so critical that in the opinion of those who saw him, he would not stand a surgical amputation.

A tourniquet was placed as high up on the arm as possible and the distal arm wrapped in 10 per cent formaldehyde. Several areas over the shoulder which crepitated were incised and Dakin tubes were introduced. The patient soon began to improve, and his temperature and pulse fell to normal within a few days. One week after his entrance to the hospital, the condition of the patient was such that he was taken to the operating room, and it was found that the tourniquet had cut through all of the soft tissues and it was necessary for us to divide only the bone. At a subsequent date a plastic operation covered the denuded surfaces. The patient made an uneventful and rather rapid recovery.

Case 4.—Mr. E. E., aged fifty, fell head foremost beneath a train, and the wheels severed both arms at the elbow joints. When first seen by us, the patient was almost moribund with a blood pressure of 0/0. He was treated with oxygen, transfusion, stimulants, et cetera, and at the end of three and one-half hours his condition permitted a temporary surgical amputation of the right arm. He was given prophylactic tetanus and gas bacillus antitoxin. A tourniquet was wrapped around the left arm at the lowest point of viable tissue. Forty-eight hours later he had a rapid rise in temperature, a chill, and gas bacillus infection was found in the left arm above the tourniquet. The patient was again returned to the operating room and the left arm amputated surgically. Dakin tubes were introduced for his gas bacillus infection. Subsequent plastic operations were necessary on both arms, but he made a very satisfactory recovery.

At the time of the accident the patient survived one amputation with difficulty. The tourniquet permitted us

to delay operation on the other arm until his general condition permitted. Gas bacillus infection in the left arm certainly would not have occurred if, in our eagerness to conserve all possible tissue, we had not placed our tourniquet too low. During the second operation it was quite obvious that hemorrhage, muscle laceration, et cetera, had occurred proximal to the site of the tourniquet.

Case 5.—A male adult, aged seventy-eight, was struck by a truck, sustaining compound, comminuted fractures of the tibia and fibula and severance of the soft tissues of the calf of the leg, including the vessels, nerves and muscles. There was no sensation and no pulsation below the knee. The patient was taken to the General Hospital in severe shock where he was treated in the emergency room and given 750 c.c. of blood. He was subsequently moved to a private hospital where he entered our care. He was still in shock. His systolic blood pressure ranged from 80 to 90 but his skin was cold and his general condition was poor.

The original tourniquet was removed and an elastic rubber tube tourniquet wrapped about the leg at the level of the knee. The leg below the tourniquet was wrapped in 10 per cent formaldehyde and encased in a rubber sheet. The patient was given an additional 600 c.c. of blood, but his general condition was bad. Part of the time he could not be aroused and we felt that amputation at that time was definitely contraindicated. At the end of twenty-four hours his condition was greatly improved. His blood pressure was 140/70. The next day he was taken to the operating room, and under local anesthesia a mid-thigh amputation was performed. He was subsequently given several transfusions and other supportive treatment.

The patient had a rather stormy convalescence, but we were fortunate to have primary healing of his flaps. On the sixteenth postoperative day the patient developed bronchopneumonia from which he recovered, and he was discharged from the hospital on the twenty-sixth day with the flaps completely healed.

Case 6.—Mrs. S. H., aged fifty-eight, who was referred to us through the courtesy of Dr. W. K. Foster, had been a victim of arthritis and heart disease for a long period of time. On February 27, 1941, when seen by Dr. Foster, the patient gave a history of very severe pain in the left leg six days previously and a second attack with violently severe pain in the right leg three days previously.

On examination the popliteal vessels were found to be completely occluded with a beginning gangrene of the left foot and left leg. The right leg had undoubtedly started as a popliteal occlusion, but the thrombus had formed until it had occluded the deep femoral vessel, and gangrene had already extended well up onto the thigh. The patient was in extremely critical condition, with decompensation and auricular fibrillation and at times delirium.

She was treated medically for several days and was presented clinically to the Surgical Section of the American College of Surgeons meeting in Minneapolis as a problem case. We all agreed that inasmuch as the patient was improving and both legs were undergoing a dry gangrene, it was better to let the patient alone. However, a few days later she became progressively more toxic with elevation of temperature, and it was quite obvious that the right leg was the cause of her relapse. A piece of gum rubber tubing was wrapped tightly around the thigh at the lowest point at which the amputation might be considered successful. The distal leg was wrapped in formaldehyde dressings covered with rubber sheeting. At the end of nineteen days the patient was very greatly improved. The tourniquet had cut through all of the soft tissues and the bone was severed. The patient's condition improved materially during the time that the tourniquet was cutting through the thigh, and after the amputation, her temperature returned nearly to normal and her pulse and heart action were greatly improved. Surgical amputation on this patient at any time since we first saw her would have been fatal. However, she stood the tourniquet amputation without any apparent ill effect on her already critical condition. A tourniquet amputation of the other leg was contemplated.

In this case, because of the high thigh amputation and the possibility of secondary hemorrhage from the femoral artery, a sterile tray with Kirschner wires and tourniquet was maintained in constant readiness in the patient's room. The Kirschner wires naturally were to keep the tourniquet from slipping off when applied in such a high position.

NOTE: After publication of the preceding report, the patient's other leg was treated by the tourniquet method. On the sixth day, however, before the amputation was completed, she suddenly expired from a coronary occlusion.

Cases 3, 4, 5 and 6 have previously been reported.

Case 7.—Mrs. E. J., was seen in consultation with the late Dr. W. Moir. This patient, seventy-two years of age, entered Asbury Hospital on November 17, 1941. She had been a diabetic for years. For two months she had had a progressive gangrene of the left third and fourth toes. Blood sugar was 286 milligrams per cent.

On November 27, 1941, an amputation was done by Dr. Moir at the tarsometatarsal joints, removing the gangrenous area. Infection aggravated her condition, and her temperature rose to 103° on the third postoperative day. On the eleventh and twelfth postoperative days the patient was delirious. Temperature was 102° with very difficult control of sugar.

On the twelfth postoperative day a tourniquet was applied in the patient's bed and the leg wrapped in formaldehyde dressings. Twenty-four hours later her temperature was normal, she had lost her delirium, and the diabetes was more readily controlled.

Ten days after application of the tourniquet the leg was amputated. The bone was divided at a higher level and the skin edges loosely approximated. This patient recovered and returned home about three weeks later with the stump nearly healed.

Case 8.—Mr. K., aged sixty-eight, a married man, gave a long history of cardiac disease. His heart had been irregular for years. On February 18, 1944, he stated that he had had a mild stroke two years previously. During the past year he had been better and had worked daily. On the morning of February 18 when he got up, he began to have numbness in his right foot, then blanching and severe pain. He was hospitalized, and an iliac embolectomy was done by Dr. H. Hoffert and myself with complete recovery.

The patient developed the same symptoms, with pain, numbness and a cold right leg, on September 24, 1945. He was seen late by Dr. A. Cardle, who stated his heart was fibrillating and his condition was not good. When seen by me, he had a gangrene of his right leg. An electrocardiogram was reported to indicate the presence of (1) auricular flutter, (2) myocardial damage, (3) left axis deviation and (4) coronary disease.

On September 28, 1945, the patient's condition was not good, and he was complaining of very severe pain in his right leg. A rubber tourniquet was applied and the leg wrapped in formalin. During the next two days the patient had almost no reaction and required only two hypodermics for pain during the first twenty-four hours. Nine days postoperatively, his condition had improved to such a degree that he was taken to the operating room and the amputation was completed by Dr. Hoffert. The bone was divided at a higher level and adhesive traction brought the skin edges togther. Thirteen days later he was discharged from the hospital with the

stump partially healed. He was subsequently fitted with an artificial limb.

Case 9.—Mrs. D., aged seventy-three, entered St. Mary's Hospital on September 14, 1943. The history and physical examination revealed hypertension, left heart failure and severe diabetes. She had a gangrenous left foot which produced a severely toxic effect. Her electrocardiogram was normal, but the x-ray revealed cardiac enlargement and pulmonary congestion. Sixty-five units of insulin failed to keep her urine sugar below 3 to 4 plus. She developed a severe infection, rapidly spreading into the gangrenous foot, and her temperature rose to 102° plus.

On September 21, 1943, a tourniquet was applied below the knee and the distal segment wrapped in formalin, encased in a rubber sheet. On September 22, 1943, twenty-four hours later, her temperature was normal, she had no shock or ill effect and almost no pain from the application of the tourniquet. Nine days later the amputation was completed with a Gigli saw without anesthesia. There was more slough at the end of the guillotine stump than usual and one week later, when the patient's condition permitted, she was taken to the operating room and, under local anesthesia, the bones were divided at a higher level and skin flaps fashioned and loosely approximated. The patient recovered slowly and returned home with the stump nearly healed.

Case 10.—Mrs. J., reported through the courtesy of Dr. L. K. Buzzelle, was an elderly lady who had a severe heart attack in California. Several weeks later she was removed from a train in Minneapolis and taken to Asbury Hospital in a semiconscious state. She developed an embolic gangrene of the left leg and was in very critical condition. Because of her severely toxic condition, amputation was advised, and because of her critical state, a tourniquet amputation was selected as the least hazardous.

A tourniquet was applied June 15, 1945, and the leg wrapped as usual. There was no shock or deleterious effect from the procedure and on the tenth postoperative day the amputation was completed. Traction was used on the skin of the stump. She weathered her operation without event but, five days later, had a hemiplegia from which she expired. Autopsy revealed coronary sclerosis, arteriosclerosis, hypertensive kidney disease, and the immediate cause of death to be cerebral hemorrhage.

Case 11.—Mrs. C. was seen in consultation with the late Dr. Salt.

This patient, forty-nine years of age, married, was seen by me when she was in a pitiful state. She had sustained a fracture of the right hip which was treated by open operation and mechanical fixation with evident success. Subsequently it became necessary to remove the screws, and the wound later became infected. She developed an osteomyelitis with destruction of the neck and upper shaft of the femur. When seen by me, the patient was a confirmed drug addict who cried out upon the slightest manipulation. Her leg was frail and turned if not supported. Nursing care was a problem as she ate little and had fallen away badly in weight. It was almost impossible to turn her or care for her.

Amputation was advised but none believed she could tolerate an operation of election. As a result, a tourniquet was applied under pentothal sodium at a level 3 inches below the greater tuberosity on March 20, 1945. She had a stormy time for several days, but sixteen days later, under the influence of morphine sulphate, the amputation was completed in the patient's bed. The leg healed slowly, and two months later she was discharged from the hospital. The stump was nearly healed, and she was no longer taking any drugs. She was eating well and had gained weight.

Case 12.—Mr. F., aged fifty-seven, a married man, stated that he had had diabetes for nine years which was controlled by diet. He had developed a sore on the outer side of his right foot three years previously which responded but little to treatment. Three weeks before he was seen, the foot became progressively worse with swelling and discoloration, and a moist gangrene involved the foot.

When seen by us, he had a swollen, moist gangrenous foot with streaks extending well up the leg. On January 13, 1946, his temperature was 101° and pulse 100. Urine revealed sugar, 4 plus; his blood sugar was 258 mg. per cent, and white blood count was 33,000. The next day his condition was worse, and his temperature rose to 102°. At that time the first stage of a tourniquet amputation was instituted. At the end of twenty-four hours his temperature was normal, pulse 75 to 80, and the sugar in his urine was 2 plus. He required only one hypodermic in the first twenty-four hours, and one daily controlled pain during the first few days.

Ten days later the patient's condition was excellent, and a Gritti-Stokes operation was performed. There was little reaction to either operation and the patient was discharged sixteen days later with primary healing.

Case 13.—Mr. J. McM., aged sixty-one, was admitted to the hospital quite toxic and incoherent. We obtained information that he had a painful foot for six weeks, but he continued to work on a farm. During the past week the middle toe of the right foot became black, and the pain was so great that he could not be up and about. When seen by me, he was very toxic, confused mentally and complained of intolerable pain in his foot and leg. He presented a swollen right leg with a typical picture of moist gangrene extending to just below the right knee. Cellulitis was starting up the thigh. His blood sugar was 188 mg. per cent but he had 3 plus sugar in his urine.

On December 31, 1947, the first stage of a mid-thigh tourniquet amputation was performed. He experienced no shock and no noticeable ill effect. His blood pressure remained 120/60 throughout. Six days later the amputation was completed without anesthesia and a sterile dressing applied over a guillotine stump. One week later when the patient was up in a wheel-chair he suddenly expired from coronary occlusion.

Case 14.—Mrs. K., a middle-aged woman who was in excellent condition, was skillfully operated upon by another surgeon for a fibromyoma of the uterus. Four days later she developed severe pain in her right leg with blanching, numbness, reduced temperature and an absent pulsation in the arteries of her foot. An embolectomy was done, but gangrene developed. Two days later a guillotine amputation was done 6 inches below the knee where the circulation seemed good. The stump became septic and the flaps sloughed. She had chills and severe reactions from all transfusions, and one month after the embolectomy she became delirious, with temperature to 103° and pulse 140. He condition was so serious that she undoubtedly could not have stood a surgical mid-thigh amputation.

A rubber tube tourniquet was applied, and the temperature fell and delirium improved. However, she continued to have pain, and her condition remained poor, so that when her temperature again rose to 102° she was taken to the operating room and, under general anesthesia, a guillotine amputation completed. Although her convalescence was stormy and slow, she made a complete recovery. I believe in this instance the tourniquet delayed amputation and improved her general condition enough to permit a successful guillotine operation.

Case 15.—This patient, a man, aged seventy-five, entered the University of Minnesota Hospitals in very poor condition. He was completely studied, and unrelated

findings will not be reported. His hospital diagnoses were (1) diabetes, (2) arteriosclerosis, (3) coronary heart disease and (4) gangrene of left leg. The patient complained bitterly of pain in the gangrenous leg; his temperature was moderately elevated, and there was mild sepsis.

Morphine and scopolamine were given intravenously; a tourniquet was applied and the leg wrapped in formalin. There were no unusual reactions but the patient's temperature remained elevated and the x-ray suggested the possible cause to be pulmonary. During the completion of the second stage under anesthesia, the patient expired. the autopsy revealed as the immediate cause of death, acute pulmonary atelectasis.

NOTE: The reports of Cases 16 and 17 are through the courtesy of Dr. R. Pogue, Watertown, Minnesota.

Case 16.—This elderly, very frail woman, aged seventy-five, a severe diabetic, developed gangrene of her left foot. She suffered severely for a long time and was confined to her bed because her family objected to amputation. She became moderately septic, with sugar, 4 plus, in her urine, and was controlled with difficulty by insulin. I do not believe an elective mid-thigh amputation could have been done successfully on this poor-risk patient. As a result a tourniquet was applied; there was no reaction, and her insulin requirement dropped instantly. Ten days later her condition was greatly improved and the second stage was done under local anesthesia, dividing the bone at a higher level and bringing the skin loosely together. She had excellent healing and made a splendid recovery.

Case 17.—This patient, a man, sixty-eight years of age, in January, 1947, complained of severe pain in his left foot where he had developed two ulcers. The patient was a severe diabetic with 4-plus sugar in his urine, poorly controlled with large doses of insulin. The infection progressed, and his temperature rose to 102°. On February 20, 1947, a rubber tube tourniquet was applied 6 inches below the knee and the leg wrapped in a rubber pillow filled with chopped ice. Almost immediately his temperature returned to normal, and the insulin requirement was cut one-half. Eleven days later, after an intravenous dose of morphine, the leg was severed with a Gigli saw. Insulin was discontinued and the patient experienced an uneventful recovery.

Of unusual interest in this case was the fact that Dr. Pogue was away, and instructions were given over long distance telephone to his associate who had never seen the method employed.

Case 18.—Mr. L. B., seventy years of age, married, was a printer by trade. He entered the hospital because of unbearable pain in his left foot and leg. He stated that he had had repeated anginal attacks since 1942, and one and one-half years later suffered a right hemiplegia. His hospital diagnoses were (1) arteriosclerotic heart disease, severe, (2) thrombosis of left femoral artery, (3) dry gangrene of left heel and toes of left foot, and (4) hemiplegia, right, secondary to cerebral embolism.

On January 31, 1947, under morphine and scopolamine given intravenously, a rubber tube tourniquet was applied. His temperature remained elevated and he expired four days later. Autopsy revealed (1) bronchopneumonia, (2) coronary sclerosis, generalized, (3) arteriosclerosis, generalized.

Case 19.—(By courtesy of Dr. W. White) This man, aged seventy-eight, had suffered from (1) arteriosclerosis, generalized, and (2) coronary arteriosclerosis and senility. He developed an acute coronary occlusion and was bed-fast. He fell out of bed and injured his left leg, which was followed by numbness in the leg for several days, when he developed an acute gangrene with very severe pain. It was because of the progressive condition of the disease and almost intolerable pain that amputation was advised.

A rubber tube turniquet was applied just above the knee. Eight days later the amputation was completed. The patient lived five days longer and expired in a state of general exhaustion and loss of strength.

Case 20.—This is probably one of the outstanding cases of this series and proves the value of the method in trauma.

The patient, aged sixty-five, a merchant, was crossing the railway tracks to his place of business when he was hit by a locomotive engine. He was taken to the Minneapolis General Hospital in severe shock, where he was given 750 c.c. of pooled plasma. He was then transferred to Asbury Hospital where he entered our care. Examination revealed the following injuries:

1. Crushing of the right foot with extreme mutilation of the tarsal and metatarsal bones.
2. Dislocation with compounded injury of the left ankle.
3. Fracture of the right pubic ramus, of the right ilium and separation of the right sacroiliac.
4. Fracture of the neck of the left femur.
5. Fracture of the transverse processes of the third and fourth lumbar vertebrae.
6. Fracture of the fifth, sixth and seventh ribs on the left and the sixth and seventh ribs on the right side.

Plasma and blood transfusions were administered, together with other supportive measures, and, as soon as his condition would permit, a debridement of the left ankle was done. The ankle joint, which was widely open, was freely irrigated. The dislocation was reduced and the wound closed with only a small drain. To maintain reduction of the ankle and at the same time keep the fractured femoral neck from displacing, a Kirschner wire was passed through the left os calcis and traction applied. We were convinced that surgical amputation of the irreparable right leg might well result fatally in one so severely injured. We applied a rubber tube tourniquet about the junction of the lower and middle thirds of the calf and wrapped the distal portion in a formalin dressing in a rubber sheet.

The patient responded well to supportive treatment, and on the eighth day the leg was severed with a Gigli saw without anesthesia. Eleven days later he developed a severe thrombophlebitis involving the left leg. Ten days after the onset of the phlebitis, we did an open reduction of the left hip and anchored the fractured ends with three large screws.

One month after the injury, the left ankle was healed, the right hip had been secured by internal fixation, and the guillotine stump of the right leg was healing well. One hundred days after the administration of the pooled plasma, he developed acute infectious jaundice. The guillotine stump was eventually closed by a minor plastic operation under local anesthesia.

It is now one year since the accident; the patient is quite well and wears a well-fitting artificial leg. The left hip is also firmly united.

NOTE: Since writing this paper, I have obtained a report from the Minneapolis General Hospital, through the courtesy of Dr. E. A. Regnier, in which the tourniquet was applied in twenty cases with sixteen deaths, or a mortality of 80 per cent. The high mortality rate is due to the fact that the tourniquet operation was used only in almost moribund cases who would tolerate only ice anesthesia and in whom general or spinal anesthesia were definitely contraindicated. The report also con-

cludes, however, that in no case could death be attributed to the use of the tourniquet.

Conclusions

The tourniquet amputation is an expedient to be used for those patients in whom an extremity must be sacrificed but in whom a classical amputation would be extremely hazardous in the presence of forbidding surgical risk. The tourniquet may be used for only a few days, at which time a classical operation may be done if the improvement in the patient's physical state warrants, or it may be allowed to remain on until a guillotine amputation has been accomplished, except that it is necessary only to divide the insensitive, compressed tissue and bone. The odor from the gangrenous extremity is prevented by the use of formaldehyde solution. We are convinced by our own experience that lives have been saved which might otherwise have been lost.

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Discussion

Dr. A. A. Zierold, Minneapolis: I had understood that Dr. Regnier was to discuss this paper, and in his absence I have not had an opportunity to review his material. It is my recollection that several years ago we asked Dr. Maxeiner to come to the General Hospital, where he is a consulting surgeon, to demonstrate this procedure, and that we have used it since that time with a great deal of satisfaction. There is no question but that Dr. Maxeiner has added to our surgical development by this technique.

Some years ago, Cannon, in his studies on shock, demonstrated the value and danger of the tourniquet. If a tourniquet was applied to an extremity and the extremity was traumatized, shock did not develop; but if, after trauma to the extremity, the tourniquet was removed, shock promptly developed. Following Dr. Maxeiner's procedure, it should be possible, in similar cases in which amputation is contemplated, to apply a tourniquet at such a time as to prevent the shock which so frequently occurs following emergency surgery. I do not believe that there can be any quarrel with this technique and this procedure. It seems to be very reasonable. At the Minneapolis General Hospital we have used this method in individuals who had sustained injuries to the extremities and later developed infections which jeopardized the life of the individual, and the results have been very gratifying. We have not extended its use to the treatment of diabetic gangrene or to gas gangrene, but I believe we shall do so in the future. It is particularly interesting to note the results that Dr. Maxeiner cites in cases of gas gangrene treated by a tourniquet. Without this evidence, I should hesitate to use this method. I believe this technique will in many cases displace refrigeration anesthesia. Certainly it is quite as effective and much less trying to the patient and the hospital staff. I believe that we should be congratulated upon our opportunity to hear so new and so satisfactory a technique as Dr. Maxeiner has described.

Dr. H. B. Zimmermann, St. Paul: I have had absolutely no experience with Dr. Maxeiner's technique, but it seems entirely reasonable to me, and, if the occasion arises, I intend to use it. I was interested in his use of formaldehyde. I was at one time House Officer at General Memorial Hospital, in New York, and the patients with malignancy who were sent to the cancer hospital usually had very far advanced involvement. It was the custom there to do just as Dr. Maxeiner did, placing dressings of formaldehyde over the ulcerating lesion, even injecting the formalin with a needle right into the breast. Apparently it did no harm, and the patients improved after the treatment. The breasts dried up and were easily amputated. I have done that in cases of advanced and ulcerating malignant disease.

Dr. Donald McCarthy, Minneapolis: Those persons treated by this method whom I have seen have done very satisfactorily, and there has been lessening of the toxemia almost immediately upon the application of the tourniquet.

Dr. Maxeiner (in closing): I appreciate Dr. Zierold's kind remarks and realize that this is not a much used procedure. My idea in bringing it forth again is to endeavor to bring to the attention of the profession a procedure which we believe has great value in a certain group of patients who are critically ill. It is not an operation of election but one rather of desperation.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary*

MINNEAPOLIS HEALTH STATISTICS

(Continued from Page 177)

pected cases already under observation an increase in the number of reported cases of tuberculosis in 1948 compared to average years is expected.

It is to be emphasized that these increases in reported cases does not mean that tuberculosis is more prevalent but rather that more unknown and unsuspected tuberculosis in apparently healthy people is being found and reported to the health department.

Real progress in venereal disease control was achieved during the year with a reduction in syphilis cases from 737 to 590 in 1946 and 1947, respectively, and a decrease in gonorrhea cases from 1,018 to 808 in 1946 and 1947, respectively.

No cases of smallpox, leprosy, or tularemia were reported during the year. Only one case of typhoid fever was reported.

The health agencies of the city, including the general public, worked together admirably during the past year. Under many handicaps, the hospitals, the physicians and the nurses of the community have performed a great service. As a result, Minneapolis has maintained the enviable position in the forefront of the large cities as a healthful place in which to live.

OPPORTUNITIES IN OVERSEAS PRACTICE

The U. S. Army Medical Department announces the availability of opportunities for advanced training and experience in the various special fields of medicine and surgery in overseas Army hospitals in Germany and Austria. These hospitals are registered with the AMA, and credit is given time spent in assignments to the specialties in them by the various specialty Boards. Eligible physicians should communicate with the Surgeon General, U. S. Army, Washington 25, D. C.

Minneapolis Surgical Society

Meeting of October 2, 1947

Dr. Thomas J. Kinsella, Presiding

THE SPHINCTER OF ODDI IN MAN

GEORGE S. BERGH, M.D.

Minneapolis, Minnesota

The discharge of bile into the duodenum is dependent upon the pressure of bile secretion, the activity of the gall bladder, and the tonus of the sphincter of the bile duct. Although attention has been directed to the biliary tract since antiquity, accurate knowledge of the sphincter of Oddi has been acquired only relatively recently.[3]

Anatomical Considerations

It has been established that there is a distinct sphincter at the terminal portion of the bile duct, and that this muscle develops independently of the duodenal musculature.[8]

As the bile and pancreatic ducts enter the duodenal wall they pass through a lengthwise hiatus in the longitudinal muscle and a transverse fenestra in the circular muscle. Boyden[14] has classified the muscles of the choledocho-duodenal junction into (1) muscles of the choledocho-duodenal aperture, and (2) intrinsic muscles of the ducts and ampulla.

The muscles of the choledocho-duodenal aperture include: (1) the superior and inferior margins of the choledochal fenestra, which impinge upon the ducts at only one level and differ in this respect from the anatomical arrangement in animals such as the dog; (2) reinforcing fibres (R-fibres) at the angles of the fenestra; and (3) connecting fibres (C-fibres) which secure the margins of the hiatus and fenestra to the papilla and ducts.

The intrinsic muscles of the ducts and ampulla include: (1) the sphincter choledochus, (2) the longitudinal fascicles, (3) the sphincter pancreaticus, and (4) the sphincter ampullae.

The sphincter choledochus is the most highly developed portion of the intrinsic sphincter of Oddi. It consists of an annular sheath of muscle fibres surrounding the bile duct from a position just outside the window to the junction with the pancreatic duct. It is capable of obstructing the flow of bile without closing the pancreatic duct. The sphincter pancreaticus is an annular band of fibres around the lower end of the pancreatic duct. It is not constant. The sphincter ampullae surrounds the ampulla, when the latter structure is present, and also encircles the lower end of the bile and pancreatic ducts. Kreilkamp and Boyden[14] found it to be well developed in only one-sixth of adults. Contraction of this muscle prevents the flow of bile and pancreatic juice into the duodenum and may permit the reflux of bile into the pancreatic duct or of pancreatic juice into the bile duct. The longitudinal fascicles consist of two columns of longitudinal fibres lying between the choledochus and the pancreatic duct. They probably serve to erect the papilla and facilitate the discharge of bile.

Physiological Considerations

There are marked species differences between the sphincter of Oddi of man and that of the common laboratory animals. On the basis of structural differences, anatomists have correctly predicted that the activity of the human sphincter would differ from that of animals. Boyden[7] has pointed out that, in man, the window in the duodenal muscle through which the bile and pancreatic ducts enter the intestine is of such shape and size that duodenal peristalsis exerts a minimal effect on the flow of bile. By contrast, the duodenal window of the dog has the shape of a funnel which envelops the first two-fifths of the intramural course of the bile duct. Most observers agree that, in animals, duodenal motility and tone exert a powerful influence on the flow of bile into the duodenum. But these factors are less important in man. Furthermore, it has been demonstrated[5] that the human sphincter of Oddi functions independently of the duodenal musculature. When we speak of the sphincter in a physiological sense, however, we may refer to the entire intramural regulatory mechanism, including both the action of the true sphincter and any influence which might be exerted by the muscle of the intestine.

The first activity to be attributed to the sphincter mechanism is the prevention of regurgitation of duodenal contents into the common bile duct, although the mucosal folds arising in the ampulla may be even more important in accomplishing this. When the sphincter action is eliminated, such as occurs in cases of internal biliary fistula, some degree of ascending infection follows. This infection usually is subclinical, but occasionally it may be severe. For this reason, Paine[18] has emphasized the importance of preserving the sphincter of Oddi whenever possible in reconstructive operations for stricture of the bile ducts.

A second function of the sphincter is to regulate the flow of bile into the intestine. Although bile is secreted continuously it is admitted to the duodenum only intermittently, depending upon the state of contraction of the gall bladder and of the sphincter of the bile duct.

A third function of the sphincter of Oddi is to aid in filling the gall bladder. If the sphincter mechanism be destroyed, the gall bladder does not fill and the bile flows directly into the intestine. If concentrated gallbladder bile has any superiority over unconcentrated hepatic bile in the process of digestion, the part played

Inaugural thesis.

in the filling of the gall bladder is an important function of the sphincter of Oddi.

A fourth function, attributed to joint action of the longitudinal fascicles and the connecting fibres, is to erect the papilla and facilitate the discharge of bile into the duodenum.

The extent of nervous control of the sphincter of Oddi still is not settled. The so-called Doyon-Meltzer law of reciprocal innervation of the gall bladder and sphincter maintains that when the gall bladder contracts, the sphincter relaxes as a result of reflex excitation. Apparently a reciprocal relationship actually does exist, at least under certain circumstances, but there is no good evidence that it is under nervous control in man. There is evidence, on the other hand, suggesting that the hormone, cholecystokinin, which causes the gall bladder to contract also produces relaxation of the sphincter of Oddi. Painful sensations identical with biliary colic may be produced by spastic contraction of the sphincter of Oddi in man.[4,15] The pain in some cases remains localized in the epigastrium or right hypochondrium, while in other cases there is radiation to the interscapular or right subscapular region. Associated with the pain, there may be abdominal muscle spasm and inspiratory distress, and occasionally nausea and vomiting. Schrager and Ivy[20] have demonstrated that in animals similar pain responses may be abolished by splanchnic section, and nausea and vomiting may be abolished by section of the vagi. It has been assumed that the sensory innervation of the sphincter in man is similar. Snell, McGowan and Butsch[21] have reported three patients upon whom right splanchnic section was undertaken in an attempt to relieve postcholecystectomy pain. The procedure was successful in one case. Experimental work of Boyden and Johnson[13] indicates that the lesser splanchnics and first lumbar roots of the celiac plexus may also participate in the conduction of pain impulses from the sphincter of Oddi.

Sphincter Resistance

The force which is exerted by the sphincter mechanism resisting the flow of fluid from the bile duct into the duodenum may be measured in patients with intubation of the common bile duct. Although sphincter resistance cannot be determined in entirely normal individuals, we have considered the measurements obtained in cholecystectomized and choledochostomized patients who had recovered from their operation, who were feeling well, and who had fasted for eight hours, as "normal." In such cases the sphincter can withstand pressures between 9 and 23 centimeters of water, and the sphincter resistance is most often around 12 to 15 centimeters. Changes of a few millimeters in the intraductal pressure occur during respiration, and marked changes are apparent during coughing, laughing or vomiting as a result of temporarily increased intra-abdominal pressure.

In some patients with choledocholithiasis, the sphincter may be irritable and may remain irritable for weeks or months after choledocholithotomy. In such cases the muscle readily goes into spasm and the intramural resistance may reach 30 or 40 centimeters of water or more, and usually fluctuates through a wide range instead of becoming stabilized. Such irritability probably is due to an inflammatory lesion—choledochitis secondary to stone. After several months of external drainage of the duct, the irritability disappears and the sphincter apparently returns to normal. These observations have led us to utilize sphincter resistance tests as one of the criteria for the determination of the proper time for removal of choledochostomy tubes.[3] The drainage tube is not withdrawn until the sphincter resistance is normal and examination reveals that the muscle is not irritable.

To hasten the return of the sphincter to normal, Macdonald[16] has advocated the use of postoperative perfusion of the biliary duct system with warm saline solution. If such irrigations are carried out, pressures only slightly above the sphincter resistance should be used. Forceful irrigations not only produce pain, but also may cause a recrudescence of an existing choledochitis with fever, general malaise, and sometimes even jaundice.

Mixer and Rigler[17] have shown that only moderate elevation of intraductal pressures may cause regurgitation of bacteria from the bile ducts into the blood stream. Diodrast or thorotrast, introduced into the ducts for purposes of cholangiography, likewise may be regurgitated into the blood stream if they are injected under pressure.

Hypertrophy of the sphincter muscle may occur in patients with an irritable sphincter, and several procedures have been suggested to combat such a condition. The most common procedure is gentle dilatation by the passage of graduated sounds at the time of operation. Any such instrumentation must be carried out gently to avoid tearing of tissues with subsequent scar formation. Colp and Doubilet[9] have advocated actual section of the sphincter with a special instrument which they have designed.

Response of the Sphincter to Food

It is well known that the ingestion of a meal is followed by a flow of bile into the intestine. Studies concerning the effect of various foods upon the activity of the sphincter of Oddi have demonstrated that ingestion of a fatty meal consisting of egg yolks and cream causes relaxation,[2] proteins occasionally produce relaxation, but neither a carbohydrate meal nor glucose given intravenously has any significant effect. Water taken by mouth also fails to produce a change in sphincter resistance.

Response of the Sphincter to Drugs

Morphine, codeine, pantopon and dilaudid produce prompt and prolonged contraction of the sphincter of Oddi.[3] In spite of that effect they are useful for the relief of biliary colic because of their central effect in the relief of pain. Utendorfer[22] has accumulated data which indicate that demerol also produces central relief from the pain of biliary colic without producing spasm of the sphincter of Oddi.

Amyl nitrite and nitroglycerine produce relaxation of the sphincter, but erythrol tetranitrate is ineffective. Trasentin, epinephrine, ephedrine, histamine and ethyl

alcohol sometimes produce sphincter relaxation, but the effects are inconstant.[3]

Magnesium sulfate[6] may produce sphincter relaxation with or without an initial contraction; it may produce an initial contraction followed by a return to the original tonus level, or there may be no effect. Relaxation, when it does occur, usually is not great, and contraction of the gall bladder following administration of magnesium sulfate probably is more important than sphincter relaxation in producing a flow of bile into the duodenum in patients with a functioning gall bladder.

Although atropine[1] does produce sphincter relaxation in the dog, it does not have any significant action upon the sphincter of Oddi in man, even in doses up to one-fiftieth of a grain. Pilocarpine, papaverine, posterior pituitary extract, benzedrine, prostigmine and caffeine sodium benzoate likewise have no significant effect upon the sphincter. The effects of sodium dehydrocholate, histamine, epinephrine, ephedrine, calcium gluconate and calcium chloride are not constant.[3]

Biliary Dyskinesia

As early as 1761, Morgagni suspected that spasm of the bile duct might produce clinical disorders. Oddi, with his more complete understanding of the anatomical arrangement of the muscular sphincter of the duct, advanced that proposition. More recently the importance of sphincter spasm in its relation to symptoms has been emphasized by many investigators. Ivy, Voegtlin and Greengard[12] have shown that motor dysfunction may cause biliary colic in normal human subjects with non-inflamed biliary passages. Observations made upon patients with choledochostomies also demonstrate clearly that spasm of the sphincter can produce pain. Pavel[19] has reported cases of functional obstruction with jaundice.

Presumably, therefore, a purely functional derangement (biliary dyskinesia or biliary dyssynergia) may produce spasm of the sphincter of Oddi with resultant biliary colic. In most instances, however, irritability of the sphincter is probably on an organis basis. Snell, McGowan and Butsch[21] have suggested that local inflammatory processes may induce sphincter spasm, and Ivy and Goldman[11] have pointed out that inflammation of the ampulla could make the muscle hyperirritable. Reflex contractions of the sphincter secondary to disturbances in more remote organs have not been demonstrated in man.

Sudden distention of the bile ducts produces deep epigastric or right upper quadrant distress. Gradual distention, on the other hand, produces no pain. The pain due to distention is less severe than pain due to sphincter spasm, and it is of a different character. Distention produces a dull distress, while sphincter spasm produces a sharper pain typical of biliary colic. In this connection it must be remembered that sudden distention of the bile ducts may cause the sphincter to go into spasm.

Ivy[10] has pointed out that a spastic sphincter can exert a resistance to flow greater than the force exerted by maximal gall-bladder contraction. Therefore, if the gall bladder contracts rapidly against a spastic sphincter, a sudden distention of the bile ducts occurs. Such conditions could lead to pain.[10]

Clinical diagnosis of biliary dyskinesia is extremely difficult. Symptoms may be ascribed to a functional disorder only after every effort has been made to rule out the presence of an organic lesion. Ivy[10] suggests that occasionally one may secure circumstantial evidence in support of the diagnosis. If the typical pain can be reproduced by administration of a fatty meal, cholecystographic studies should be carried out. Visualization of the cystic and common bile ducts after administration of a fatty meal is not unusual. But visualization of the hepatic ducts indicates that the gall bladder is expelling concentrated bile faster than the bile enters the intestine. Pain may result from spasm of the sphincter or distention of the ducts. However, more often the patients do not complain of pain, even though the hepatic ducts may be visualized during cholecystography.[10] Furthermore, negative cholecystographic studies do not entirely eliminate the possible existence of an organic disease.

Delayed evacuation of the gall bladder during cholecystography is not sufficient evidence for a diagnosis of dyskinesia, since the normal variation is great.[10]

Effect of Cholecystectomy upon the Sphincter

Since the time of Oddi, a number of investigators have recognized that extirpation of the gall bladder in certain animals, such as the dog, cat, and goat, and also in man, may be followed by dilatation of the biliary ducts. Several explanations have been advanced to account for this change. The most widely accepted explanation is that the dilatation is the result of increased intraductal pressure following cholecystectomy. This theory depends upon a persistence of action of the sphincter of Oddi. In the absence of the gall bladder, which normally acts as a pressure regulator, the increased pressure must be accommodated by dilatation of the duct. Our observations, and those of other investigators, support this view.[3]

Whether tone or response of the sphincter in man is altered by cholecystectomy cannot be stated definitely, since all studies have been made in individuals who have been operated upon. However, measurements of sphincter resistance in patients with choledochostomy tubes indicate that the sphincter does maintain tonus and activity following cholecystectomy, and the figures obtained are similar in range to those found in normal dogs.

In some cases the sphincter may exert abnormally high resistance to bile flow and may show irritability and go into spasm. A spastic sphincter may be one of the causes of postcholecystectomy colic.

Summary

The intrinsic sphincter of the common bile duct is anatomically and physiologically distinct from the duodenal musculature.

Functions which have been attributed to the sphincter of Oddi are: (1) making possible the filling of the gall bladder, (2) preventing the regurgitation of intestinal contents into the bile duct, (3) regulating the discharge of bile into the duodenum, and (4) erecting the papilla.

The force which is exerted by the sphincter mechan-

ism resisting the flow of fluid from the bile duct into the duodenum may be measured in patients with intubation of the common bile duct. Normal sphincter resistance varies between 9 and 23 centimeters of water, and usually it is around 12 to 15 centimeters of water.

In some patients with choledocholithiasis the sphincter may be irritable, and may remain irritable for weeks or months after choledocholithotomy. After prolonged external drainage of the bile duct, the irritability usually disappears and the sphincter returns to normal.

Any substances injected into the bile ducts for treatment or diagnosis (e.g., cholangiography) should be injected gently. Only moderate elevation of intraductal pressure may cause regurgitation of bacteria into the blood stream. Forceful irrigations may also cause a recrudescence of an existing choledochitis with fever, general malaise, and sometimes even jaundice.

The ingestion of a fatty meal causes relaxation of the sphincter, proteins occasionally produce relaxation, but neither a carbohydrate meal nor glucose given intravenously has any significant effect.

Morphine, codeine, pantopon and dilaudid produce contraction of the sphincter of Oddi. Demerol does not cause spasm of the sphincter.

Amyl nitrite and nitroglycerine produce relaxation of the sphincter.

The sphincter of Oddi is of clinical significance. Purely functional derangements may produce spasm of the sphincter with resultant biliary colic. If the gall bladder contracts against a spastic sphincter, distress may be produced as a result of sudden distention of the ducts. In most cases, however, irritability of the sphincter is probably on an organic basis.

Sphincter tone persists after cholecystectomy. The increased intraductal pressure which occurs in the absence of the gall bladder results in dilatation of the bile ducts.

A spastic sphincter of Oddi may be one of the causes of postcholecystectomy colic.

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OPERATIVE AND NON-OPERATIVE METHODS IN THE MANAGEMENT OF COMMON DUCT LESIONS

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In presenting this subject of common duct lesions, I am first going to discuss the diagnosis briefly. In the recent war, many of us saw many cases of jaundice. Occasionally, we were confronted with cases of suspected infectious hepatitis where severe distress and colic-like pain were described, and the differential diagnosis was difficult. Of the many cases I saw in consultation with several excellent internists, we erred in only one instance by advising an operation in a case of infectious hepatitis. This soldier had had repeated hospitalizations for jaundice and colic. I did not remove the gall bladder but merely excised a section of liver for microscopic study. I believe we, as surgeons, should be of some help to our medical colleagues by also being acquainted with the picture of infectious hepatitis. Pain, colic and jaundice, especially when attacks are repeated, favor a surgical jaundice. I know of no test which determines definitely and at all times whether the individual has a surgical jaundice or a nonsurgical jaundice, so we must depend largely upon the history and careful analysis of the many laboratory tests.

The jaundice of infectious hepatitis develops fairly rapidly but usually lasts only a week to ten days, after which the jaundice progressively subsides. Rarely is the stool acholic for more than a week. In cases with stones, whether colic is present or absent, the jaundice level is usually fluctuating but may or may not be prolonged. In jaundice due to malignancy, the icteric changes are continuous and progressive until surgical intervention. I believe we all delay surgical intervention when a patient is jaundiced. Usually one is not warranted to advise operation until after several weeks of observation unless the diagnosis of stone or malignancy can be definitely established.

Patients with jaundice are many times very uncomfortable during the time we are trying to make a diagnosis, attempting to improve liver function, correcting fluid balance and protein levels, and improving the prothrombin time. I have tried many means of relieving the intense itching. Usually 5 to 10 per cent glucose so-

lution intravenously gives relief for two to three hours or even longer. Ergotamine tartrate, in dosages of .25 mg. subcutaneously or 1 mg. orally, may be helpful, although this may be contraindicated where liver function tests show considerable damage. Many times it is not present in the jaundiced individual. In several cases, I have tried sodium thiosulfate in .5 gm. to 1 gm. doses intravenously, but certainly this is not the answer for all individuals. Novocaine intravenously over a 2-hour period has been advocated, using a 1 gm. dose in 500 c.c. of intravenous solution. Quite frequently this gives relief for some six to ten hours. The most helpful application for the patient to use himself is the following modified calamine lotion:

Phenol	dr. 1
Pulv. calamine prep.	dr. 1
Zinc oxide	dr. 2
Glycerin	dr. 2
Liquor hamamelis	oz. 1
Aqua Rosae	oz. 1
Milk of magnesia q.s. a.d.	oz. 6

Mix small amounts of this with equal amounts of Parapsyllium or Petrolagar and apply as necessary for itching.

This mixture without the oil gives only momentary relief in itching from jaundice, for as soon as the solution dries, itching is worse, as dry skin is more uncomfortable than moist skin. This accounts for mixing it with an oily base. I have been happy about the comfort this mixture affords patients.

When the decision has been reached that surgical interference is indicated and the patient has been properly prepared, regardless of whether or not the jaundice has subsided, the common duct must be opened and explored. If no obstructing agent is found along the common duct or hepatic duct, and the conclusion is reached that the diagnosis is in error, a section of liver should be excised for microscopic study. This will possibly confirm the existence of an intrahepatic and nonsurgical type of jaundice.

In cases of surgical jaundice, in addition to a history of jaundice, the common duct should be opened under the following conditions, namely, palpable stones or tumor within the duct, dilatation of the duct, sclerosis or thickening of the duct wall, history of repeated chills and fever, and small stones within the gall bladder. However, in the past seven years, I have not so frequently opened the common duct when small stones were present in the gall bladder because the biliary flush has proved quite successful in removing small stones and debris from the common duct. This confidence is also based upon the success of the flush in removing larger stones which have been visualized by choledochograms, and by a definite decrease in the postcholecystectomy syndrone in patients who have been operated upon for biliary tract disease and have had the biliary flush. In the last 100 cholecystectomy cases, the common duct was opened in twenty-four instances (24 per cent), and stones removed from the common duct in sixteen (16 per cent). At one time, I was opening the common duct in 40 per cent of the cases.

Is there danger in opening the common duct? I believe

TABLE I. INCIDENCE OF LIVER STONES IN CHOLELITHIASIS

Cases of Cholelithiasis	Cases of Liver Stone	Incidence Per Cent	Author	Year Reported	Country
Not given	Not given	5.0	Thudichum	1863	Germany
Not given	Not given	9.0	Schroeder	1892	Germany
72	6	8.3	Beer	1904	Germany
257	20	7.7	Miyake	1913	Japan
97	7	7.2	Hansen	1926	Norway
30	2	6.6	Best	1943	U.S.A.
436	35	7.4*			
		7.6**			

*Average of all percentages
**Average excluding first 2 groups

very little harm results from this procedure. A stricture has never developed in my experience, and the only accident occurred very recently when I was working around the common duct in a heavy-set individual in whom I knew there was some anomaly but which I could not figure out. While we were opening the common duct, a severe hemorrhage occurred, filling the abdomen and operative field with blood. This was controlled immediately by pressure on the hepatic artery, as it looked like arterial blood. After clearing the field, oxidized gauze (Hemopak) was used and the bleeding was controlled. This is my only experience with a severe arterial hemorrhage controlled by oxidized gauze. Repeated exploration of the region did not disclose an end or side of a vessel which should be ligated. Fresh oxidized gauze was applied to the area, and no postoperative hemorrhage occurred.

The most frequent source of remaining common-duct stone is the stone which is overlooked at the first operation. Not infrequently the common duct is opened and explored and no stone found, but the delayed cholangiogram reveals the presence of such a stone. Probably the next most common source is the hepatic or hepatic-duct stone which reaches the common duct following operation. It is possible that stones may form in the common duct later, but it is most likely that the nucleus of such a stone is a small unidentified stone which later collects debris and precipitate. Also, small stones may be dislodged into the common duct during cholecystectomy.

What is the incidence of liver stones in cholelithiasis? Perusal of routine autopsy reports will not reveal such a finding. Rarely does the pathologist slice the entire liver sufficiently thinly and explore the intrahepatic ducts for stones. A few years ago, I thoroughly examined the liver at the autopsy table in thirty patients who had died of various causes but whose gall bladders contained stones. Two of these had stones within the ducts of the liver. The literature was then reviewed, but there were few reports on the true incidence of liver stones. Table I summarizes by findings in the literature. This is a collection of 456 cases of cholelithiasis where the liver was thoroughly investigated, and liver stones were found in thirty-five cases, an incidence of 7.5 per cent for liver stones in cases of cholelithiasis. This figure is certainly of some significance as to the etiology of the postcholecystectomy syndrome which has been caused by a common-duct stone.

It is my impression that if we produce a physiologic flush of the intrahepatic and extrahepatic ducts, unidentified stones in the common duct and debris remaning

in the common duct, which can be the nucleus of common-duct stones, may be flushed out and prevent later common-duct symptoms and difficulties. We are able to increase the bile flow by giving the patient a hydrocholeretic, which results in a 100 to 200 per cent increase of bile flow. The bile produced by a hydrocholeretic is thin and watery, differing from the average bile produced by a choleretic (plain bile salts). This increased flow of bile has been determined in a rather large group of patients and the resulting increased ductal pressure has also been measured in patients with an indwelling common-duct T-tube. Our experiments have been with decholin and procholon, but we have reason to believe that ketochol has the same effect. In establishing a flushing effect, one should take advantage of every means of relaxing the choledochal sphincter area, which would then permit passage of the stone, stones or debris into the duodenum. We feel that the following three-day regime has given the best results. Usually a rest of a few days to several weeks is given between flushes. Under no circumstances should the three-day biliary flush be given when the common duct is completely obstructed.

Three-day Biliary Flush Regime

1. Take three of the larger tablets (Procholon or Decholin) after each meal and at bedtime for three days.
2. Take 1 teaspoonful of magnesium sulphate in water each morning.
3. Take 2 tablespoonfuls of pure cream or olive oil before noon and evening meals and at bedtime.
4. On the first day, place one of the nitroglycerin tablets (1/100 gr.) under the tongue before each meal.
5. On the second day, dissolve one of the atropine tablets (1/100 gr.) in a little water and take before each meal.
6. On the third day, repeat the nitroglycerin tablets as on the first day.

There have been some rather dramatic expulsions of remaining stones from the common duct. That success has been attained in removing common-duct stones has been revealed by postoperative cholangiograms in about 40 per cent of the cases. Frequently, additional means have been employed to promote dislodgement of the stone. Daily irrigations with warm saline followed by warm olive oil are almost routine. Occasionally, warm iodized oil seems to be more beneficial. At times, additional antispasmodics are necessary to afford sufficient relaxation of the choledochal sphincter area. Aminophyllin in 7.5 grain doses has been used as recommended by Means and Delor, Gladstone, and Goodman and Cole. Arrest of the spasm of the sphincter area may be accomplished by instillation of 5 to 10 c.c. of a 1:500 solution of nupercaine solution, as recommended by Harris and Marcus of San Francisco. Fragmentation or chemical reduction of the stone has also proven most helpful in our experience. Pribam introduced ether as a solvent of certain gallstones, and later this was modified by Osterberg to a mixture of ⅔ ethyl ether and ⅓ ethyl alcohol, which we have used. There have been some reports that this drug has damaging effects on the liver. Boyce does not believe ether to be too dangerous. Raffl made some experimental studies of the effect of ether on cells of the liver and bile ducts and concluded that if provision is made for escape of the solution, so as to prevent the building up of too high an intrahepatic or intraductal pressure, cellular injury does not occur. He recommended a double catheter arrangement, the second tube being an escape vent for the vaporizing ether. We have depended upon careful manipulation of the plunger in the syringe, pulling it back as the patient's pain becomes severe and then reinjecting as the pressure decreases. A mixture of 3 c.c. of ethyl ether and 2 c.c. of ethyl alcohol has been used in our cases each day during the flush treatment. In every instance, the patient has complained of pain, but usually there is complete relief as the plunger of the syringe is drawn back. On one occasion, where we had used this solution some six times with six series of flushes, the patient became rather listless for a few days, and we suspected some possible liver shock. The amount of bile flow decreased and became rather light in color. We immediately instituted all means of building up liver function, and the bile flow returned to normal in four days. A check-up cholangiogram revealed that the stone in the common duct had been dislodged. A few days later, the T-tube was removed, and the patient has remained well, it now being over a year. In this particular instance, three flush treatments—two with daily instillations of the ether-alcohol mixture—had been tried without success. The patient was sent home for three months and advised to take the three-day flush treatment every two weeks. On her return to the hospital, and following three more flush treatments with ether-alcohol instillations, this questionable effect on liver function occurred. In other cases, we have been successful in dislodging stones after repeated efforts, which included the patient going home for several months and then returning for further treatment. Walters and Wesson, Morton and a few others have reported success with the use of the ether-alcohol mixture.

There has been a search for a more effective solvent which is innocuous to living tissue. Narat and Cipolla in 1945 reported on the use of chloroform. Chloroform, like ether, is a solvent for cholesterol, but in addition causes dissolution of bile pigment. They injected warm chloroform (heated to 38° C. or 100.4° F.) into the gall bladder and common duct of dogs, and then after sacrificing the animals, studied the microscopic sections of the biliary ducts and liver. They concluded that injection of chloroform did not produce any demonstrable changes in the liver, gall bladder or extrahepatic ducts. However, they felt that repeated injections in the postoperative period should be discouraged, as they might represent a potential hazard. They favor the use of chloroform at the operating table in the management of the elusive stone. We have used chloroform on two patients, and in one case (two instillations), in conjunction with the biliary flush, the stone was dislodged. We used 5 c.c. of heated chloroform on two successive days. However, until after further observation, one should be a little cautious in using chloroform.

Goldman, Jackman and Eastman reported on the use of Solution G as a solvent for remaining common-duct stones and detailed the success in two cases. This is an interesting report, as the *in vitro* experiments were disappointing. However, the method should be kept in mind

and tried further. We have used it in one patient without success, but also all other methods failed. The formula of Solution G is as follows:

Citric acide (monohydrated)	32.25
Magnesium oxide (anhydrous)	3.84
Sodium carbonate (anhydrous)	4.37
Water q.s. a.d.	1000.00 c.c.

This solution is permitted to drip into the common-duct T-tube at the rate of 30 drops per minute, and may be repeated several times daily.

It is our routine in all cases of biliary tract operations to start the biliary flush on about the eighth postoperative day and repeat it in about two weeks. In cases where the delayed cholangiogram reveals a stone in the lower end of the common duct, the biliary flush is used in conjunction with the other agents as just discussed. In these cases, we have been successful in removing stones in about 40 per cent of the cases. Some of these cases have been primarily operated upon by me and others by surgeons elsewhere.

Secondary operations on the biliary tract are difficult and carry a greater hazard than the primary operation. Therefore, this non-operative management is strongly recommended before a secondary operation is considered. Even the secondary operation may be unsuccessful in locating and removing the elusive stone. We have seen as many as eleven stones remaining in one common duct, and by the flush method have recovered the stones from the stool. Also we have dislodged some large intact stones from the common duct and recovered these from the stool when our imagination could barely stretch to the possibility that these stones had escaped through such a narrow area. Improvements in methods for fragmentation and dissolution of the common-duct stone are wanting.

The development of a stricture of the common duct following cholecystectomy is a major complication. This may express itself by development of a biliary fistula with acholic stools or appearance of jaundice. I have not been successful in my attempts with plastic procedures, and either depend on anastomosing the proximal duct to a loop of jejunum or placing some type of rubber or vitallium tubing in the duct and reconstructing the duct over this material. Where the hepatic duct is anastomosed to the intestine, I prefer to divide the upper jejunum and anastomose the distal end to the hepatic duct over a vitallium tube (Cole) and re-establish continuity by an end-to-side anastomosis. Where continuity of the duct can be re-established, which is probably the method of choice because of preserving the common duct sphincter mechanism, I prefer using the vitallium tube. I have modified the ends of my vitallium tubes slightly by having the manufacturer drill six staggered holes near the upper end. Usually the upper end of this metal tube projects into the portohepatis area of the liver, and I have felt that some of the poor results reported have probably been occasioned by the tube draining one segment of the liver but blocking drainage from the other duct or ducts converging in this area. These small perforations may prevent this complication. The flange of the vitallium tube is, if at all possible, fixed into the liver or scar tissue with a silk suture. All of these patients and all other patients with biliary-intestinal anastomoses are directed to take the bile flush the first three days of each month or oftener. Naturally if the choledochal sphincter mechanism is not functioning, it is not necessary to use the antispasmodic agents. Many of these patients are also advised to take small daily doses of one of the hydrocholeretics (two tablets night and morning). The free flow of this watery bile tends to prevent the formation of a precipitate in the tube and if corrosion and encrustation do develop, the thinner bile makes an easier exit.

Malignancy obstructing the lower end of the common duct, whether primary in the duct, papilla of Vater, duodenum or pancreas, usually requires a similar procedure, entailing transection across the lower end of the common duct and removal of the duodenum and head of the pancreas, thus destroying the ductal system between the pancreas and intestinal tract. The one-stage operation is preferable, but occasionally the two-stage procedure is advisable. If the two-stage procedure seems indicated, the first stage consists of transecting the jejunum quite some distance from the duodeno-jejunal angle and anastomosing the distal end to the gall bladder or common duct. An anterior gastrojejunostomy is made and the proximal end of jejunum anastomosed end-to-side to the single limb of the jejunum leading to the hepatic area. If the second stage does not seem advisable, short-circuiting routes for the obstructed bile and the duodenal contents have been established. If the lesion is inflammatory, adequate rest has been provided for the duodenum and the lower end of the common duct. In the one-stage procedure, Cole's modification of the Whipple method is preferred. At the present time, I feel that the open end of the transected pancreas should be implanted into the side of a limb of the jejunum. My own experiences with this procedure have not been very favorable as to longevity before recurrence. As one reviews case reports, three- and five-year cures are unusual. In fact, in some cases where only the palliative procedures as described in the first operation for the two-stage procedure have been used, comfort and longevity have been about the same as with the radical procedure. Error in diagnosis between malignancy and an inflammatory lesion involving the pancreas is sometimes a problem in surgery of this region.

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Discussion

DR. JAMES HAYES: I would like to ask Dr. Best if he uses his flush procedure on all T-tube cases whether they have any unfavorable symptoms or not.

DR. BEST: Yes, in all cases. In routine cholecystectomy cases, the patient is given the flush on about the eighth postoperative day, and this is repeated two weeks later. After removal of a T-tube, I usually wait twenty-four to forty-eight hours and then start the biliary flush. This is repeated two weeks later.

DR. HAYES: How long is it since you put in your first vitallium tube? I put one in about six years ago. The patient has been perfectly well since. Two years after operation the tube could be seen in place. Today the tube does not show with the x-ray, but the patient seems perfectly well. I have two other patients with vitallium tubes in for four and five years, respectively. They have both been perfectly well since the operation. All of these patients had been operated upon more than once before the vitallium tubes were inserted. I was wondering how long you had observed this tube in place?

DR. BEST: Two years is the longest I have had a vitallium tube in place. I believe that putting the holes in the end of the tube is an advantage. I can tell better in another year or two.

DR. CLARENCE DENNIS: I helped Dr. John Paine put a tube in before he joined the army, and while he was away I had to take that tube out. It had passed halfway into the duodenum and had become lodged and covered with concretions. I didn't start the patient with a biliary flush, but I would have been better off if I had. I had to go back and take the vitallium tube out. A silk suture had been put through the flange to hold the tube in place.

I would like to ask another question. With the anastomosis of the type Dr. Allen described, have you found that biliary flushes are successful in taking care of the symptoms of chills and fever when they have developed? I ask this in view of the fact that the biliary flush is designed to depend on the effect of the sphincter in the lower end of the common duct. Good results have followed use of the flush at the University.

DR. BEST: The biliary flush consists of two elements, namely, production of a thin watery bile and measures to relax the sphincter mechanism. In choledocho-intestinal anastomosis, the production of thin bile and its flushing effect on the tubal system are the only factors to consider.

DR. O. J. CAMPBELL: I would like to ask Dr. Best whether I was misled by my experiment in attempting to dissolve some gallstones which I had previously removed from a gall bladder. The circumstances were as follows:

Following removal of a gall bladder full of stones, then removal of the stones from the common duct, the patient subsequently showed symptoms of a remaining common-duct stone. The T-tube was still in place, and the question arose as to whether to reoperate or to attempt to flush the stones. I took some of the stones which were fresh from the gall bladder, put them in olive oil and alcohol. I do not believe that I used chloroform. At the end of seventy-two hours they were still as solid as they were originally. On this basis I decided that flushing was not feasible, and so I surgically removed the remaining stones from the common duct.

Under these circumstances, should I have tried to flush anyway?

DR. BEST: Most certainly I would have tried the flush regime, and if not successful the first time, I would have repeated it.

RETINITIS PIGMENTOSA

(Continued from Page 157)

Case Reports of a Sister and Brother

Case 1—J. B., a girl, aged ten, had suffered from nystagmus since fifteen months of age. Her eyes had turned in since she was a baby. She had always been unable to see at night, and had a great deal of difficulty with her school work. There was no history of eye trouble either in the father's or mother's family. The father and mother were not related.

Examination: Vision of the right eye was 4/200; vision of the left eye was 3/200.

Manifest refraction:

R.E. $+ 8.00S = + 1.000 \times 90 = 5/200$
L.E. $+ 8.00S = + 1.250 \times 90 = 5/200$

Fundus examination revealed extensive pigmentary changes over the entire fundus except in the macula area of both eyes. Visual fields were contracted to one-half the normal size. Color vision was normal.

Case 2.—D. B., aged six, a brother of J. B., had suffered from nystagmus since four months of age. His eyes turned in. He had worn glasses since he was two years old. Vision in the right eye was 2/200, in the left eye, 1/100.

Manifest refraction:

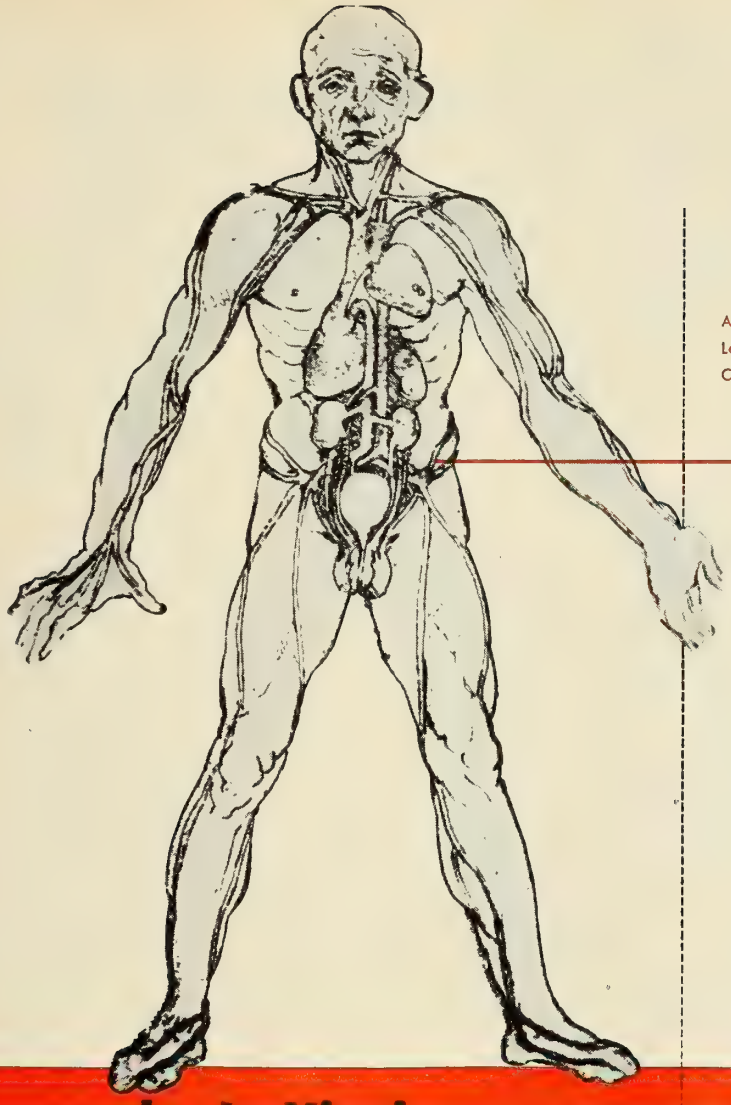
R.E. $+ 5.50S = 20/200$
L.E. $+ 5.50S = 20/200$

Pigmentary changes were seen in the periphery of both fundi, about half as numerous and smaller in size than the pigmentary changes in the fundi of his sister. In the peripheral retina there were several areas consistent with gyrat atrophy of the choroid.

These patients now are enrolled in a sight-saving class. Soon they will study braille, as their vision will surely fail.

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The people of the world are suffering today from a shortage of fats and oils. More than half a century ago, Dr. John Harvey Kellogg made an excellent suggestion, which if carried out would have added greatly to our food resources. It was to plant nut trees on both sides of every highway in the United States. If this had been done, the trees today would be bearing enough fruit to supply huge quantities of protein of the finest quality, as well as excellent oils. While much valuable time has been lost, it is not too late to start such a tree-planting program now. This plan fits into the reforestation project on which we have embarked.—*Good Health,* November, 1947.



Anatomic drawing by
Leonardo da Vinci—
Courtesy, The Bettmann Archive.

Leonardo da Vinci (1452-1519)

was well ahead of his time, for physicians of his day knew little of the function of the heart or the treatment of its diseases, although da Vinci's knowledge of such anatomy was extensive.

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Reports and Announcements

INTERNATIONAL SURGICAL ASSEMBLY

The Sixth International Assembly of the International College of Surgeons will be held in Rome, Italy, at the invitation of the Italian Government, during the week of May 16-23, 1948, under the presidency of Professors Raffaele Bastianelli and Raffaele Paolucci of Rome, and Mario Dogliotti of Turin. The Secretary of the Assembly is Prof. Giuseppe Bendandi of Rome. Attendance is not limited to the membership of the College. All surgeons in good standing in their medical organizations are invited.

Scientific meetings, scientific and commercial exhibits, visits to the Universities of Turin and Milan have been arranged, together with tours to other medical centers in Europe. A special exhibit of ancient texts on surgery is being arranged by Prof. Davide Giordano of Venice, Honorary President, under the active presidency of Prof. Adalberto Pazzini, Professor of History at the University of Rome. This extraordinary exhibit dealing with ancient surgery will be on display in the Vallicelliana Library in one of the historical buildings of the Vatican.

Detailed information may be obtained from Dr. Max Thorek, General Secretary, 850 Irving Park Road, Chicago 13. For travel information, address the All Nations Travel Bureau, 38 S. Dearborn Street, Chicago, the official travel representatives for this Assembly. Those desiring to present scientific papers should address Dr. Karl Meyer, Cook County Hospital, Chicago; Dr. Henry W. Meyerding, Mayo Foundation, Rochester, Minnesota; or Dr. Herbert Acuff, Acuff Clinic, 514 W. Church Street, Knoxville, Tennessee. Those from Canada should direct their inquiries to Dr. Lyon Appleby, 925 W. George Street, Vancouver, B. C.

FELLOWSHIPS IN PHYSICAL MEDICINE

In the past year the American Board of Physical Medicine has been established as a recognized medical specialty. Qualifications for examination for the Board include three years of clinic, hospital and laboratory training in institutions approved by the Board. The Department of Physical Medicine of the University of Minnesota Medical School has established fellowships of one to three years' duration providing the experience and training necessary to fulfill these qualifications.

The departments and institutions affiliated with the Department of Physical Medicine for providing this training include the basic science departments of the Medical School, the Peripheral Vascular Clinic, the Department of Neurology, Minneapolis General Hospital, Rosemount Poliomyelitis Hospital, Minneapolis Veterans Hospital, and the Section on Physical Medicine of the Mayo Clinic. Rotating fellowships have been set up through these departments to provide experience in diagnosis and treatment of orthopedic, neurologic, vascular, and arthritic diseases. Within this broad general program it is possible to concentrate work on any field of special interest. Likewise, for physicians interested in fields closely related to physical medicine such as orthopedics and neurology, it is possible to arrange special programs concentrating on the problems of those fields. In addition, time and facilities are available to do research on fundamental or clinical problems related to the practice of physical medicine.

The stipend of the Medical School fellowship is $1,380 per annum. Veterans may obtain subsistence pay up to $2,400. The fellowships at the Minneapolis Veterans Hospital carry a stipend of $3,600. All fellowships are granted annually and are renewable for three years.

FELLOWSHIP IN HEALTH EDUCATION

Fellowships leading to a Master's Degree in Public Health in the field of Health Education are again being offered to any qualified United States citizen between the ages of twenty-two and forty, according to a statement released in January by the United States Public Health Service, Federal Security Agency. Funds are available through a grant from the National Foundation for Infantile Paralysis.

Candidates must hold a Bachelor's degree from a recognized college or university at the time the application is filed, and must be able to meet the entrance requirements of the accredited school of public health of their choice. Proof of acceptance at such a school must be furnished before applications are submitted to the Fellowship Awards Committee for consideration. In addition to the Bachelor's degree, courses in the biological sciences, sociology and education are required. Training in public speaking, journalism, psychology and work in public health or a related field is considered desirable.

The fellowship consists of eight or nine months of academic work, which begins with the fall term in 1948, and three months of supervised field experience in community health education activities in a local health department. The academic training includes courses in

(Continued on Page 200)

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Sinusitus, ear infections, bronchitis, and the various forms of pneumonia are frequently ushered in by a cold. Pneumonia, particularly, is likely to attack a person who is overtired, or run-down because of a severe cold.

True, many of these respiratory diseases are not as dangerous as they used to be. (Modern infection-fighting drugs—such as penicillin and the sulpha drugs—offer highly effective treatment for many cases.)

But, of course, it is always better to *prevent* a serious illness whenever possible.

If you have a cold, it's just good sense to stay away from people, to avoid spreading the infection; and to get plenty of rest—in bed if possible.

If your cold is accompanied by fever, a persistent cough, or a pain in the chest, face, or ear, call your doctor at once.

The sooner you seek his help, the more he can do to help you avoid a long and serious illness.

And, in the case of children, an early examination may disclose that what appears to be only a cold may instead be a starting symptom of an entirely different disease, such as measles or scarlet fever.

SEE YOUR DOCTOR. Never try the foolhardy experiment of dosing yourself. Your doctor's treatment of one illness may be quite different from his treatment of another illness which appears the same to you.

Let your doctor diagnose your ailments. Let him decide what treatment is best for your particular case. Then follow his instructions to the letter. His advice is the only advice you should take on any question that concerns your health.

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FELLOWSHIP IN HEALTH EDUCATION

(Continued from Page 198)

public health administration, epidemiology, public health and school education, problems in health education, community organization, information techniques, and others.

Veterans are encouraged to apply, and will be paid the difference between their subsistence allowance under the GI Bill of Rights and the monthly stipend of $100 for single veterans or $150 for married veterans. Employes of State or local health departments are not eligible, since Federal grants-in-aid are provided through the States for such training.

Information and application blanks may be obtained by writing the National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club, Saint Paul, on the evening of January 13.

Elected to active membership were Dr. Roger W. Howell, Dr. Charles M. Jessico and Dr. Lawrence E. Schneider.

The program for the evening included two inaugural theses, one by Dr. Burton P. Grimes and one by Dr. Leonard A. Titrud. The title of Dr. Grimes' paper was "Murder Under Twenty-one," while Dr. Titrud's paper was entitled "Effect of High Altitude on Brain Injury Cases."

PHI DELTA EPSILON LECTURESHIP

The Minnesota Graduate Club and Alpha Xi Undergraduate Chapter of the Phi Delta Epsilon Fraternity announce their gift of an annual lectureship to the Medical School of the University of Minnesota. The first lecture will be given February 26, 1948, in the Medical Sciences Amphitheater at the University of Minnesota, by Dr. William Roemmich of the United States Public Health Service, whose topic will be "The Chest X-Ray Survey of Hennepin County." The meeting will be preceded by a banquet when the lectureship will be formally presented to the University and accepted by Dean Harold S. Diehl of the Medical School.

SIGMA XI LECTURE SERIES

"The Challenge of Cancer" was the theme of the three 1948 Sigma Xi lectures given at the University of Minnesota during February. Sponsored jointly by the Minnesota chapter of Sigma Xi, scientific research society, and the Minnesota Division of the American Cancer Society, the lectures were presented in Northrop Memorial Auditorium on the University campus and were open to the public.

The first lecture was given on February 6 by Dr. John J. Bittner, director of the Division of Cancer

(Continued on Page 202)



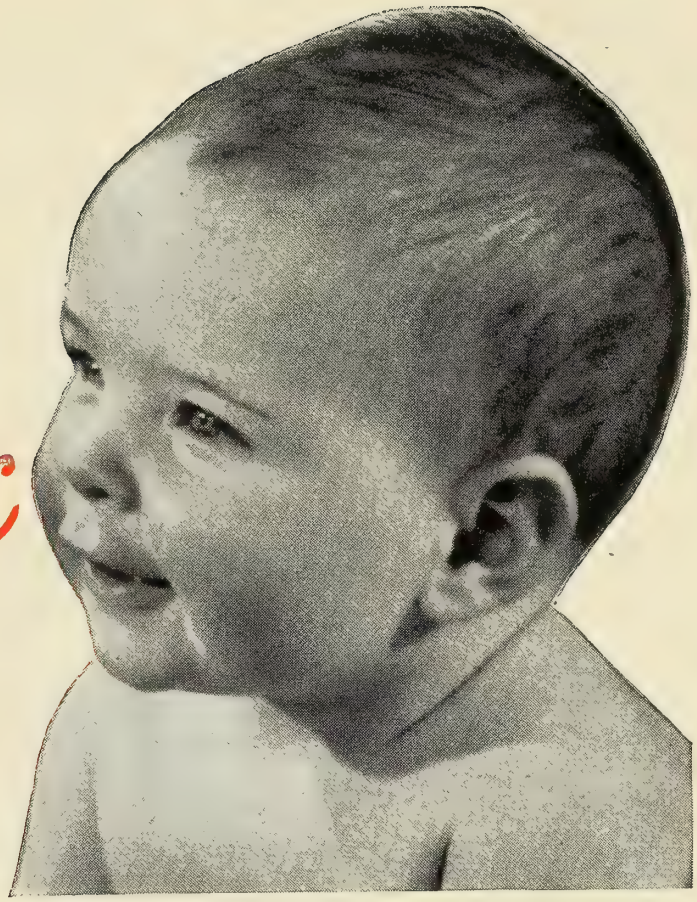
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SIGMA XI LECTURE SERIES

(Continued from Page 200)

Biology in the University of Minnesota Medical School, and was on the subject, "Investigating the Causes of Cancer."

Second lecturer in the series was Dr. Claude F. Dixon, professor of surgery in the Mayo Foundation, Rochester, who, on February 13, spoke on "Cancer Treatment Today."

Concluding the series, Dr. Owen H. Wangensteen, chief of the Department of Surgery in the University Medical School, spoke on February 20 on the subject, "The Cancer Problem Today."

RED RIVER VALLEY SOCIETY

Election of officers for 1948 highlighted the annual meeting of the Red River Valley Medical Society, held in Crookston on December 16. Named as president of the organization was Dr. M. J. Bechtel, Warren, while Dr. George Sather, Fosston, was elected vice president, and Dr. R. O. Sather, Crookston, was re-elected secretary-treasurer.

Elected as delegates to the state association were Dr. T. F. Bratrud, Thief River Falls, and Dr. Eskil Erickson, Halstad, with Dr. C. H. Holmstrom, Warren, and Dr. John Cameron, Crookston, elected as alternate delegates. Dr. K. W. Kovey, Mahnomen, was elected censor for a three-year term.

Principal speaker of the evening was Dr. J. F. Norman, Crookston, who discussed prepaid medical care.

WINONA COUNTY SOCIETY

Dr. Lewis I. Younger, Winona, has been elected president of the Winona County Medical Society to succeed Dr. S. J. Hamlon, St. Charles. Also elected to office at a recent meeting of the group was Dr. F. J. Vollmer, Winona, vice president, while Dr. Paul Heise and Dr. L. F. Johnston, both of Winona, were re-elected secretary and treasurer, respectively.

Re-elected as delegate to the state association was Dr. R. H. Wilson, Winona. Announcement was made that the Southern Minnesota Medical Association would hold its annual convention in Winona during August.

FREEBORN COUNTY SOCIETY

At the annual meeting of the Freeborn County Medical Society, held on December 17 at Hotel Albert in Albert Lea, Dr. Leo R. Prins was elected president of the organization. He succeeds the late Dr. Paul Gamble of Albert Lea.

Other officers elected at the meeting were Dr. J. P. Person, vice president; Dr. E. S. Palmerton, secretary, and Dr. R. A. Demo, treasurer, all of Albert Lea.

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WOMAN'S AUXILIARY

Blue Earth County

The Blue Earth County Auxiliary was hostess at a dinner meeting held at the Century Club, Mankato, on November 19, to the Nicollet-Le Sueur and Redwood-Brown Auxiliaries. Dr. Leonard Lange, obstetrician and gynecologist on the teaching staff of the University of Minnesota gave a talk to the doctors and their wives. About 100 attended. Mrs. A. A. Schmitz and Mrs. John Michelson were in charge of the social program. Mrs. W. W. Franchere is president of the Blue Earth Auxiliary.

Renville County

Renville County Auxiliary members were entertained at a Christmas party at the home of Dr. and Mrs. O. H. Johnson of Redwood Falls on December 9. Mrs. S. F. Ceplecha and Mrs. W. A. Brand assisted.

The Christmas seal essays were read and judged. Ruth Peterson of Sacred Heart received first prize of $5.00; Larry Notman of Franklin, second prize of $3.00, and Joan Benesh of Bird Island, third prize of $2.00 Several more subscriptions to *Hygeia* were received.

Following an exchange of gifts, the physicians, together with their speaker of the evening, Dr. George Agaard of Minneapolis, joined the Auxiliary members at the Johnson home and partook of a lunch of Christmas delicacies brought by several of the Auxiliary members.

On January 13, members of the Woman's Auxiliary to the Renville County Medical Society met for a 6:45 dinner at the Sweet Shop in Olivia. While the Doctors enjoyed a talk by a former member, Dr. W. Bushard of Edina, the Auxiliary members had a short business meeting. The rest of the evening was spent in preparing two scrapbooks. Members had brought cloth for pages and pictures. These scrapbooks were given to a hospital. All dues for the new year are in!

St. Louis County

The Woman's Auxiliary to the St. Louis County Medical Society held a meeting on January 13 at which Dr. F. S. Elias of Duluth, who is Council Chairman of the Minnesota State Medical Association, gave a talk on "Health Legislation."

The organization has a membership this year of 150 which includes forty members of the Range branch. They have planned a busy year. They are contributing to the Association for the Physically handicapped, Red Cross, Christmas Seals, Cancer Control, Society for the Prevention of Blindness. They help sponsor the Tuberculosis Essay Contest, camps for the Y.W.C.A. and Girl Scouts. They are also continuing their scholarship fund for nurses. To help them carry on this philanthropic and public health work, the members held a one-day rummage sale which netted over $300.

Washington County

The Woman's Auxiliary to the Washington County Medical Society met at the home of Mrs. Demeter Kalinoff on December 9. This was a Christmas Party so a program was given and members exchanged gifts. They decided to send a gift to their shut-in member.

The Auxiliary met at the home of Mrs. Russell E. Carlson on Tuesday, January 13, for a dessert luncheon. Miss Maurine Erickson, County Social Worker, gave an interesting talk on her work.

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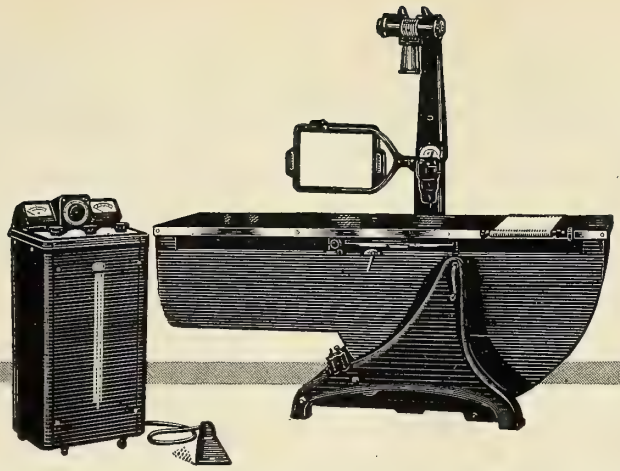
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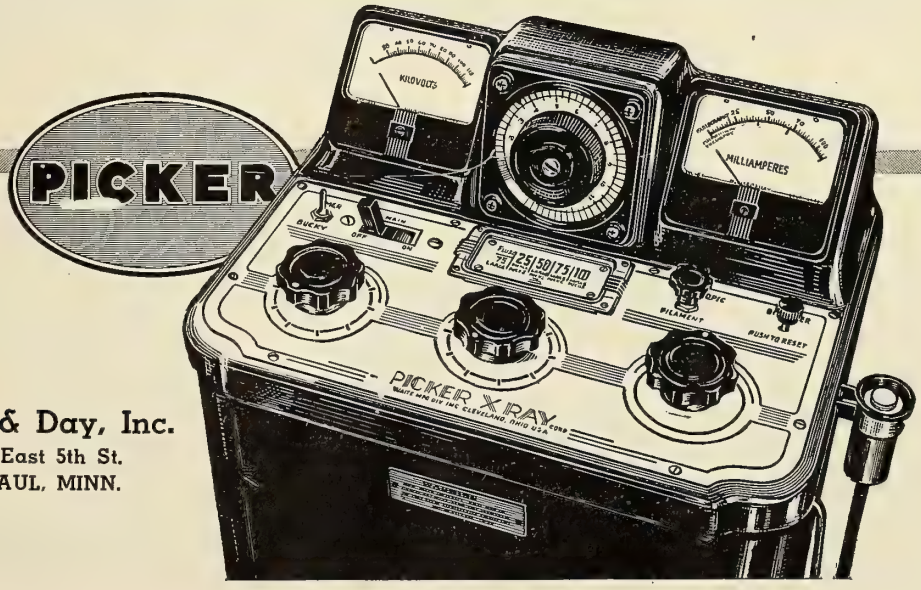
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Of General Interest

After March 15, Dr. S. T. Kucera of Lonsdale will be associated in practice with Dr. I. F. Seeley, with offices in the MacKay Building in Northfield.

* * *

In Clarissa on December 9, Dr. F. N. Grose became president of the Clarissa Commercial Club at the annual election of officers of the organization.

* * *

Principal speaker at a meeting of the Preston Parent-Teachers Association on December 17 was Dr. Maurice N. Walsh, Rochester.

* * *

An honorary award was presented to Dr. A. W. Graham, Chisholm, at the Tribute Night dinner held in Chisholm on December 15 by the American Legion drum corps.

* * *

A former resident of Sleepy Eye, Dr. L. F. Leitschuh, who has been practicing medicine in Oregon, in January began a fellowship at St. Mary's Hospital, Minneapolis.

* * *

Dr. Lawrence M. Larson, Minneapolis, has announced the association of Dr. John H. Rosenow in the practice of general surgery, with offices at 421 Medical Arts Building.

* * *

After completing an internship at Minneapolis General Hospital on January 1, Dr. Harold W. Hermann, formerly of Zumbro Falls, moved to Caledonia to open his medical practice.

* * *

"Recent Advances in Heart Disease" was the title of a talk given by Dr. Joseph F. Borg, Saint Paul, at a meeting January 15 of the Polk County (Wisconsin) Medical Society.

* * *

At the December meeting of the Range Medical Society, held in Chisholm on December 23, the principal speaker was Dr. Arthur H. Wells, pathologist of St. Luke's Hospital, Duluth.

* * *

A Commonwealth Fund fellowship was recently awarded to Dr. Edmund Flink, of the University of Minnesota Department of Medicine, to carry on a medical research project at Harvard University Medical School for one year starting September 1.

After a midwinter vacation with his parents in Mexico City, Dr. J. V. Wallinga, son of Dr. and Mrs. J. H. Wallinga, Saint Paul, has commenced his training in psychiatry at the Cleveland State Receiving Hospital.

* * *

"Common Skin Diseases" was the title of an address delivered by Dr. John F. Madden, Saint Paul, at a meeting of the Rice County Medical Society held in Faribault on February 3.

* * *

"Physiologic Principles in Aviation Medicine" was the title of a paper presented by Dr. J. H. Tillisch, Rochester, on January 5 in Cleveland, Ohio, at the meeting of the eighth annual Congress on Industrial Health of the American Medical Association.

* * *

Participating in a course at the University of Minnesota Center for Continuation Study, held during the week of January 5, Dr. George B. Eusterman, Rochester, presented a lecture entitled "Carcinoma of the Stomach."

* * *

Members of the Minnesota Society for the Study of Diseases of the Heart and Circulation, meeting in Duluth on December 13, heard Dr. H. L. Smith of Rochester speak on "The Incidence of Functional Diseases of Various Occupations."

* * *

In Havana, Cuba, early in January was Dr. L. W. Morsman, of the Morsman Clinic, Hibbing, attending the third session of the Pan-American Congress of Ophthalmology, the first meeting of the group since the start of World War II.

* * *

Among Minnesota physicians attending the annual meeting of the American Academy of Pediatrics in Dallas, Texas, early in December, were Dr. George Kimmel, Red Wing, and Dr. Roy N. Andrews, Mankato.

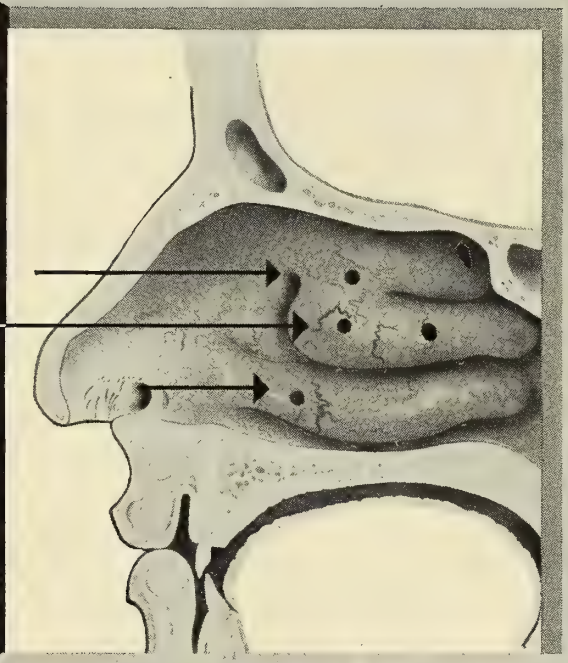
* * *

President-elect of the Stearns-Benton County Medical Society is Dr. L. M. Evans, Sauk Rapids, who was elected to office at a meeting of the society in December. President of the organization is Dr. A. H. Zachman, Melrose.

(Continued on Page 208)



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(Continued from Page 206)

Principal speaker at a meeting of the Dakota County Branch of the Child Psychology Study Circle, held on January 13 in West Saint Paul, was Dr. Edward D. Anderson, Minneapolis. Dr. Anderson, a psychiatrist, spoke on "How Can We Attain Emotional Maturity?" A question and answer period followed his talk.

* * *

Two Minnesota physicians have been named to the Council of the National Committee for Mental Hygiene. They are Dr. E. Alan Challman, Minneapolis, president of the Minnesota Mental Hygiene Society, and Dr. Benjamin Spock, Rochester, child psychiatrist at the Mayo Clinic.

* * *

Executive director of the Minnesota Division, American Cancer Society, is Allan Stone, research director for Saint Paul's Wilder Charities. Announcement of his appointment was made in December by Dr. Arthur H. Wells, Duluth, acting director of the Minnesota cancer group.

* * *

At a meeting of the Southern Minnesota Spastic Club, held in Mankato on December 19, Dr. H. H. Russ, Blue Earth, spoke to parents of cerebral palsied children of the area on the problem of the cerebral palsied as the family physician sees it. After his address, Dr. Russ conducted a question and answer period.

* * *

After purchasing a two-story office building in Northfield, Dr. Joseph Belshe has commenced his practice in that city. A graduate of the University of Minnesota Medical School in 1945, Dr. Belshe served in the army for twenty months at Lowry Field Station Hospital, Denver, Colorado.

* * *

After the city council in Stillwater reduced the salary of the city health officer from $50 to $25 a month, as part of an economy move, Dr. Russell E. Carlson announced his resignation as city health officer. He had been elected to the office a year earlier to succeed Dr. J. H. Haines, who had resigned.

* * *

Announcement has been made that Dr. Larry Swanson is now associated in practice with Doctors Lowe, Larson and Lowe, with offices at 158 North Concord Street, South Saint Paul. Dr. Swanson was graduated from the University of Minnesota Medical School in 1946 and served his internship at St. Joseph's Hospital, Saint Paul.

* * *

Now associated with Dr. Harold F. Flanagan in the practice of pediatrics, with offices at 868 Lowry Medical Arts Building, Saint Paul, is Dr. Edward F. Walsh. After graduating from the University of Minnesota in 1942, Dr. Walsh interned at Ancker Hospital, Saint Paul, served as a captain in the army, and then completed a residency at Minneapolis General Hospital.

* * *

New college office physician at Macalester College, Saint Paul, is Dr. William H. Watson, whose appointment to the position was announced on January 8. Formerly on the staff of St. Mary's Hospital, Minneapolis, Dr. Watson will maintain regular office hours on the Macalester campus. Continuing as consulting

(Continued on Page 210)

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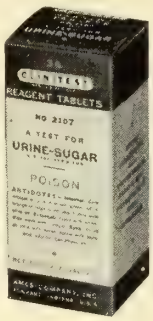
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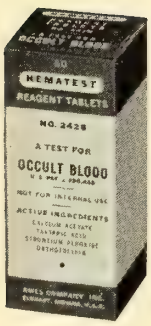
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ELKHART, INDIANA

(Continued from Page 208)

physicians at the college are Dr. Charles C. Cooper, Dr. E. J. Fogelberg, Dr. Robert K. Grau, and Dr. A. E. Ritt, all of Saint Paul.

* * *

It hardly seems necessary to warn the profession against the old swindle which has been revived by one Sr. Jose Cuito, in prison, so he says, in Mexico, and in need of several thousand dollars in order to obtain a trunk containing $385,000 in U. S. currency. The recipient of his letter, which has been sent to a "sucker list" in this country, is promised a third of the sum for his participation.

* * *

Early in January, Dr. William O. McLane, who was affiliated with the Wadena Clinic for several months, announced that he was no longer associated with the clinic and was planning to build new offices for his practice in Wadena. Until his new offices were completed, he planned to conduct his practice from his home at 219 Second Street N. W. Dr. McLane specializes in diseases of the eye, ear, nose and throat.

* * *

Streptomycin was the subject of two talks given in the East during January by Dr. H. C. Hinshaw, Rochester. On January 8 he spoke at a meeting of the New York Academy of Medicine, in New York, on the topic, "Clinical Evaluation of Streptomycin Therapy in Tuberculosis and Other Infections." On the following day, speaking in Philadelphia at a meeting of the Eastern Section of the Trudeau Society, he discussed "Clinical Problems of Streptomycin Therapy."

* * *

Acting president of the Minnesota Division, American Cancer Society, Dr. Arthur H. Wells, Duluth, was recently elected a regional director on the national American Cancer Society board of directors. Representing Minnesota, Wisconsin, Michigan, Illinois, Indiana and Iowa on the national board, Dr. Wells succeeds the late Dr. William A. O'Brien, who was president of the state unit and regional ACS director at the time of his death.

* * *

Two out-of-state talks were given by Dr. Gordon R. Kamman, Saint Paul, during the month of January. In Milwaukee, Wisconsin, on January 9, Dr. Kamman spoke before the Milwaukee County Medical Society on "The Psychobiologic Basis for the Psychosomatic Concept." In Minot, North Dakota, on January 21, his subject was "Neurotic Problems Confronting the General Practitioner" when he spoke at a meeting of the Northwest District Medical Society.

* * *

A campaign was launched in Albert Lea in December to raise funds to establish a well-equipped children's ward in Naeve Hospital in memory of three brothers who lived, practiced medicine, and died in Albert Lea.

Backing the memorial campaign were friends and admirers of the late Doctors Will, Ross and Paul Gamble. Eldest of the three brothers, Dr. Will Gamble, began his practice in Albert Lea early in the

1920's and was joined there soon afterwards by his brothers. Dr. Ross Gamble died several years ago; both Dr. Paul Gamble and Dr. Will Gamble died during the summer of 1947.

* * *

Offices for the practice of internal medicine have been opened by Dr. Eugene Rinkey at 749 Lowry Medical Arts Building, Saint Paul. A graduate of the University of Minnesota Medical School in 1940, Dr. Rinkey interned at St. Mary's Hospital, Minneapolis. After practicing at Redwood Falls for a year, he served in the army from 1942 until 1945 when he was discharged as a captain. During the past year Dr. Rinkey was a resident at Ancker Hospital, Saint Paul.

* * *

Three formerly separate sections of the army medical department were recently combined into a single unit under the command of a former Mankato woman. Chief of the new women's medical specialist corps, which now includes the dietitian section, the physical therapist section, and the occupational therapist section of the army medical department, is Colonel Emma E. Vogel, a former resident of Mankato, regarded by the surgeon general's office as the nation's outstanding physical therapist.

* * *

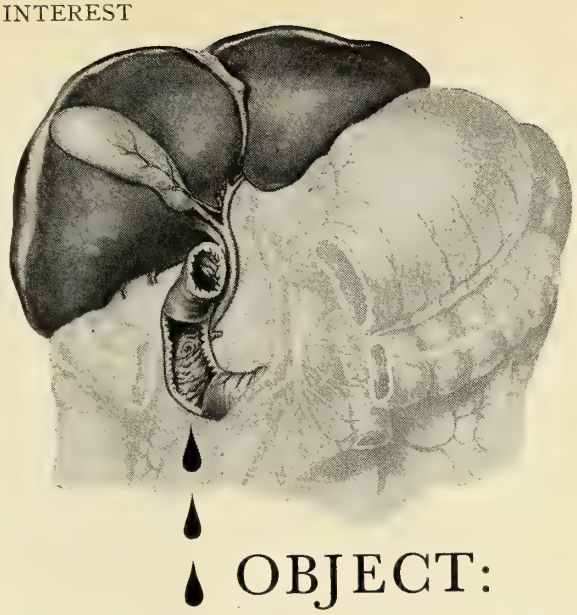
Under the direction of Dr. Walter A. Fansler, clinical assistant professor of surgery at the University of Minnesota, a continuation course in proctology as held in Minneapolis during the week of February 2 to 7. The course consisted of lectures at the University's Center for Continuation Study and clinics at Minneapolis General Hospital and Fort Snelling Veterans Hospital. Guest lecturer for the one-week course was Dr. Harry E. Bacon, head of the Department of Proctology at Temple University Medical School.

* * *

The Mississippi Valley Medical Editors Association is considering changing its name at its meeting next fall to the Mississippi Valley Medical Writers Association. It is pointed out that whereas all medical editors are writers, all medical writers are not editors, and since one of the principal purposes of the association is the improvement of medical writing, the change seems desirable. That the change in name will be made seems a foregone conclusion. Interested medical writers should contact Dr. Harold Swanberg, Secretary, 209 W. C. U. Building, Quincy, Illinois.

* * *

Dr. Lawrence W. Rember has been appointed executive assistant to Dr. George F. Lull, secretary and general manager of the AMA. Dr. Rember will be in charge of public relations, a task for which he is well qualified, having been director of public relations for the Blue Cross Plan Commission of the American Hospital Association and public relations director of the seventeen-state midwestern area of the American National Red Cross. He received an M.A. degree in journalism from Northwestern University after obtaining his B.A. degree at the University of Wisconsin, where he majored in journalism and commerce.



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*Albrecht, F. K.: Modern Management in Clinical Medicine, Baltimore, The Williams and Wilkins Co., 1946, p. 170.

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ELKHART, INDIANA

Staff members of St. Luke's Hospital, Duluth, at their November meeting heard Dr. Richard Varco, of the Department of Surgery of the University of Minnesota, speak on "The Surgical Treatment of Certain Congenital Defects of the Heart and Great Vessels."

At the December meeting of the staff, papers were presented by Dr. S. H. Boyer, Jr., Dr. E. I. Parson, and Dr. J. J. Coll, all of Duluth. The January staff meeting had as the principal speaker, Mr. James Hamilton, of the Department of Hospital Administration, University of Minnesota.

* * *

Two new appointments were made in January by the Minneapolis City Health Department. Miss Helen Hestad, former assistant director of Minneapolis Community Health Service, was appointed Maternal and Child Health Nursing Consultant in the Bureau of Public Health Nursing. Mrs. Grace Henshaw Babcock, formerly with the American Red Cross and voluntary public health nursing agencies in Minneapolis, was appointed Mental Hygiene Consultant, a newly created position in the Bureau of Public Health Nursing. The two appointments were made possible by maternal and child health funds from the Minnesota Department of Health.

* * *

Dr. Edgar V. Allen, who has been with the Mayo Clinic since 1930 and chief of a section in internal medicine since 1936, has been appointed chief of the Division of Internal Medicine at the Cleveland Clinic, a nonprofit institution, second largest of its type in the United States. Dr. Allen was graduated from the University of Nebraska in 1925; he obtained an M.S. degree from the University of Minnesota in 1932. During 1929 and 1930 he studied in Germany and England on a fellowship from the National Research Council. In World War II he served as a colonel in the medical corps of the army and was consultant in medicine for the Seventh Service Command.

* * *

After more than fifty years of practice in Fergus Falls, Dr. W. W. Drought is closing his office. Dr. Drought began his medical practice in Fergus Falls in partnership with Dr. A. B. Cole, one time state senator from Otter Tail County. Later, Doctors Cole and Drought were affiliated with a Dr. Kittelson, with offices in the First National Bank Building in Fergus Falls. Dr. Kittelson later withdrew from the group to open an individual practice. After the death of Dr. Cole, many years ago, Dr. Drought maintained the practice by himself.

* * *

The Lyon-Lincoln County Medical Society recently completed its thirty-sixth semi-annual postgraduate extension course. Initiated following World War I, each course has consisted of four to six meetings held on consecutive Tuesday evenings, with addresses by outside or local physicians. During World War II, recourse was had to medical motion pictures, which have proven valuable in the educational field. With a society membership of only twenty-one, the attendance at the

(Continued on Page 214)



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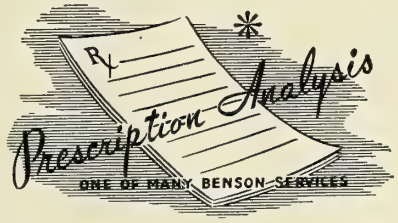
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(Continued from Page 212)

dinner meetings has been as high as fifty-four. The society is to be congratulated on its accomplishment, which, as far as is known, is unique in the territory outside the large cities of the state.

* * *

Popular response to a talk given before the Winona Kiwanis Club in August, 1947, brought Dr. Benjamin Spock, Rochester, back to Winona on February 3 as principal speaker at the Council Founders' Day program of the Winona City Parent-Teacher Association. After hearing Dr. Spock at the Kiwanis Club meeting speak on "How Grandpa Should Talk to His Grandchildren," residents of Winona urged that the Mayo Clinic child health authority be brought back to the city for another talk. Dr. Spock complied, and at the PTA meeting in February he presented the subject, "The School-Age Child."

* * *

Christmas was merrier for children in Red Wing this last season because of Dr. L. E. Claydon's ingenuity in constructing outdoor decorations.

On the porch of his home, in a setting of lighted fir trees and holly, the Red Wing physician installed a life-size figure of Santa Claus seated before a model pipe organ. Records of organ music could be "piped" from the house to the porch, and a concealed cord led from Santa into the house. As children would pass by in the evening, Dr. Claydon would turn on the music and start manipulating the cord—and Santa would nod and sway over the keyboard, playing joyous Christmas carols. The children loved it, many of them climbing onto the porch to give Santa a hug and a kiss—a satisfying reward to Dr. Claydon, who brought Santa to life in Red Wing.

* * *

The annual gold medal award for the outstanding "family doctor" was presented this year to Dr. Archer C. Sudan, a Colorado physician, by the AMA House of Delegates while assembled in Cleveland in January.

The names of several hundred general practitioners had been submitted to the AMA by medical and non-medical groups. Three names were voted upon by the House of Delegates—Dr. A. C. Sudan, Kremmling, Colorado; Dr. W. L. Presley, Due West, South Carolina, and Dr. Jacob T. Oliphant, Farmersburg, Indiana.

Dr. Sudan, a native of Sioux Falls, South Dakota, left the University of Chicago Medical School in 1926, where he was a teacher and research worker, to locate in a mountain district of Colorado where he had recognized the urgent need for a physician while on a fishing trip. He has just completed a term as president of the Colorado State Medical Association.

* * *

Le Sueur acquired a new physician on January 5 with the arrival in the city of Raymond Rowberg, formerly of Minneapolis. A graduate of the University of Minnesota Medical School, Dr. Rowberg is associated in practice with Dr. S. Ericson of Le Sueur.



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On January 1 it was announced in Ortonville that Dr. Clarence S. Youngstrom, of La Crosse, Wisconsin, was joining the staff of the Ortonville Clinic where he would be associated in practice with Dr. D. M. O'Donnell and Dr. J. F. Karn.

A graduate of the University of Nebraska in 1938, Dr. Youngstrom interned at the U. S. Marine Hospital in Seattle, Washington, later completed residencies at the University of Wisconsin General Hospital, at Milwaukee Children's Hospital and at Henry Ford Hospital in Detroit, Michigan. He spent one year in industrial surgery and another year on a fellowship in surgery at the Gunderson Clinic in La Crosse, Wisconsin.

* * *

A complimentary dinner at the Minnesota Club on January 19 was tendered Dr. Alexander R. Colvin, Saint Paul, by the surgical staff of Ancker Hospital. A graduate of McGill University Medical School in 1894, Dr. Colvin settled in Saint Paul in 1903 after studying in various European medical centers. He has practiced in Saint Paul continuously since that year, except for his service as a major in the medical corps of the army during World War I. He has been associated with Ancker Hospital since his arrival in Saint Paul, and for the past thirty years has headed the surgical service of the institution.

In his remarks following the dinner, Dr. Colvin urged his audience to re-read the great classics in medical literature and emphasized that all sciences are closely intertwined. He commended the attitude of the Welfare Board in not interfering with the medical work of Ancker Hospital. Stating that the hospital's medical staff ranks with the best in the nation, he said that the institution offers a great field for clinical and pathological study and investigation by young physicians.

* * *

Preliminary results of a survey recently conducted by three Minnesota health agencies indicated an enthusiastic interest in the problem of cancer control by Minnesota's practicing physicians.

Conducted by the Division of Cancer Control of the Minnesota Department of Health, the Cancer Committee of the Minnesota State Medical Association, and the state division of the American Cancer Society, the survey showed that (1) most physicians are in favor of a "back to school" movement with expanded continuation courses on cancer research, diagnosis and treatment; (2) half of the physicians who answered the survey advocate a free correspondence consultation service on cancer cases, and (3) two out of three physicians believe in hiring qualified medical men on a full-time basis to travel throughout the state, giving talks on cancer to hospital staffs and local medical societies.

The survey was believed to be the first of its kind on a state-wide basis to ascertain just what practicing physicians and surgeons feel are the best means of fighting the disease. The numerical response to the survey far exceeded expectations.

* * *

Minnesota's candidate for the title of the nation's outstanding "family doctor" was Dr. William W. Will, who has devoted the forty-one years since his intern-

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ship to a town of 550 persons, the community of Bertha.

From numerous candidates throughout the state, Dr. Will was selected as Minnesota's nomination for the AMA gold medal award and his name was presented to the AMA House of Delegates with the backing of the Minnesota State Medical Association.

A graduate of the University of Minnesota Medical School in 1905, Dr. Will began his practice in Bertha immediately after completing his internship. During his forty-one years of practice in the city and the surrounding area, the sixty-eight-year-old physician has attended more than 4,000 births; in September, 1946, many of these "babies" returned to the city to join in a community-wide tribute to Dr. Will.

President of the Minnesota State Medical Association in 1936, Dr. Will is still active in medical and civic affairs. At the present time, in addition to conducting his medical practice, he is president of the Bertha Commercial Club, is busy in Todd County political circles, and is prominent in church work.

* * *

At the annual meeting of the American Academy of Orthopaedic Surgeons, held in Chicago on January 27, Dr. Vernon L. Hart, Minneapolis, presented a paper on "Relationship Between Congenital Subluxation and Congenital Dislocation of the Hip." In association with Dr. Wesley H. Burnham, Minneapolis, Dr. Hart also presented the same subject in an exhibit which was awarded second honors.

* * *

Dr. Henry Michelson, Minneapolis, has been invited to be guest of honor at the annual meeting of the California State Medical Society, to be held in San Francisco in April. Dr. Michelson will discuss cutaneous cancer before the general assembly and will describe the lupus erythematosus problem before the dermatological section.

Dr. Michelson has also been invited to present the postgraduate lectures in dermatology at the University of British Columbia in Vancouver in June.

* * *

Listing of blood types of 2,500 volunteer blood donors among residents of Minneapolis suburban areas was slated to start in Wayzata in late February. Communities taking part in the project, which is sponsored by the Ernest Asleton American Legion Post of Wayzata, are Wayzata, Deephaven, Long Lake and Minnetonka Beach. Plans called for a blood typing center in the Wayzata Legion hall, handling 200 persons a night. The completed listing would enable Minneapolis hospitals to know exactly whom to call to get specific blood type replacements. It was planned to give master donor lists to all major Minneapolis hospitals, physicians' offices, town halls and servicemen's clubs.

HOSPITAL NEWS

New staff officers were elected at meetings held during December and January by the staff members of the following Minnesota hospitals:

Miller Memorial Hospital, Duluth.—At the annual meeting of the medical staff of Miller Memorial Hospital on January 9, Dr. Keith R. Fawcett was elected chief of staff, succeeding Dr. A. J. Spang. Elected



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vice chief was Dr. Karl E. Johnson, while Dr. M. G. Fredricks was named secretary. Executive committee members named at the meeting were Dr. Spang, Dr. E. E. Barrett and Dr. Mario Fischer.

Asbury Hospital, Minneapolis.—Dr. Charles H. McKenzie was elected president of the Asbury Hospital medical staff at the annual meeting held late in December. Other staff officers named were Dr. Ann W. Arnold, vice president; Dr. Wayne S. Hagen, secretary and treasurer, and Dr. C. A. McKinlay, advisory board member. Also on the board are Dr. H. E. Hoffert, Dr. Ernest R. Anderson and Dr. R. R. Cranmer.

St. Cloud Hospital, St. Cloud.—Elected president of the medical staff of St. Cloud Hospital was Dr. P. L. Halenbeck, who was named to the office at an election meeting held early in December. Also elected to office were Dr. C. J. Luckemeyer, vice president, and Dr. N. F. Musachio, of Foley, secretary.

St. Joseph's Hospital, Mankato.—New head of St. Joseph's Hospital staff is Dr. H. J. Nilson, who was elected president at the annual meeting of the staff on December 11. Dr. O. H. Jones was named vice president, and Dr. A. A. Giroux, secretary-treasurer. Appointed to the executive board were Dr. A. V. Sohmer, Dr. J. A. Butzer and Dr. Bradley Troost.

Loretto Hospital, New Ulm.—Dr. O. B. Fesenmaier was elected president of the Loretto Hospital staff at a meeting held on January 8. Also named to office were Dr. O. J. Seifert, vice president, and Dr. William Black, secretary.

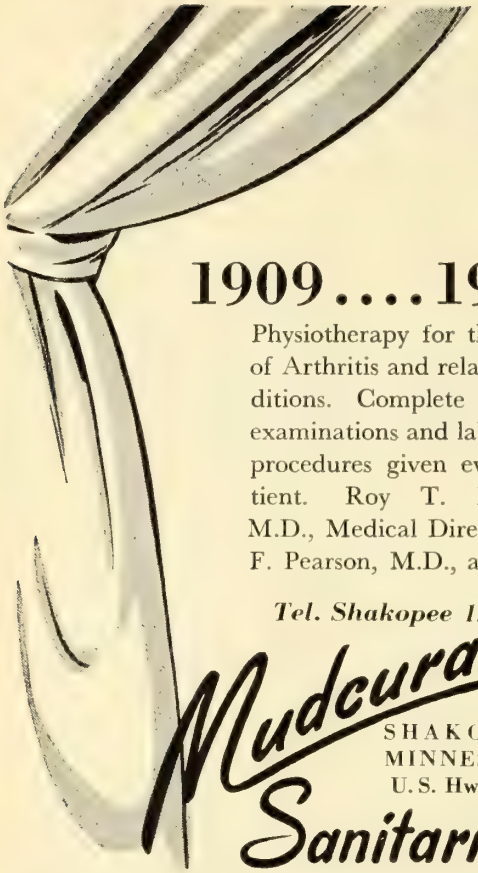
Union Hospital, New Ulm.—President of the Union Hospital staff is Dr. O. J. Seifert, who was elected to office at a meeting held on January 8. Dr. Carl Fritsche was named vice president of the staff, and Dr. Ted Fritsche, secretary.

St. Joseph's Hospital, Brainerd.—At a meeting on January 8, Dr. W. E. Fitzsimons was named chief of staff of St. Joseph's Hospital, to succeed Dr. J. A. Thabes, Sr. Also elected to office were Dr. G. E. Cardle, vice chief of staff, succeeding Dr. R. A. Beise, and Dr. A. M. Mulligan, secretary-treasurer, succeeding Dr. Fitzsimons.

St. Mary's Hospital, Minneapolis.—Dr. F. B. Mach was elected president of the advisory board of St. Mary's Hospital at the board's annual meeting early in January. Named as vice president was Dr. Leo Culligan, while Dr. L. J. Happe was elected secretary. New members elected to the board were Dr. James Hayes and Dr. Horatio Sweetser.

* * *

Early in December a delegation from the Madison Hospital Association conferred in Saint Paul with Dr. Viktor O. Wilson, chief of the Section on Special Services in the Minnesota Department of Health, in an effort to determine whether the hospital-building project in Madison could qualify for aid from Federal funds. It was decided to make a careful survey of the proposed Madison Hospital territory and to send a request to the Health Department for an engineer to make an examination of possible hospital sites.



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Included in the recently released 1947 listing of courses approved by the American Dietetic Association is the dietetic internship at the University of Minnesota Hospitals.

The dietetic internship at the University offers supervised application of college training in dietetics. All interns accepted for training are graduates of accredited colleges or universities, with majors in food and nutrition or institution management. The satisfactory completion of a year of postgraduate training in such an approved internship qualifies the student for a position as a hospital dietitian anywhere in the country.

* * *

A continuation course in hospital administration was presented during the week of February 2 to 7 at the University of Minnesota Center for Continuation Study. Co-operating with the University in offering the course were the Minnesota Hospital Association and the American College of Hospital Administrators of Chicago.

The course was divided into two three-day sessions. In charge of the first session, on "Operating Statistical and Accounting Control," was James A. Hamilton, professor of hospital administration. The second session, on "Standards and Methods of Plant Maintenance," was under the direction of James W. Stephan, associate professor of hospital administration.

On the afternoon of February 4, a special general session was given over to a consideration of the survey and construction act, both from the state and national points of view.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

140 MILLION PATIENTS. Carl Malmberg. 242 pages. Price, $2.75, cloth. New York: Reynal & Hitchcock, 1947.

MINOR SURGERY. Sixth Edition. Frederick Christopher, B.S., M.D., F.A.C.S. Associate Professor of Surgery, Northwestern University Medical School; Chief Surgeon, Evanston (Illinois) Hospital. 1058 pages. Illus. Price, $12.00, cloth. Philadelphia: W. B. Saunders Co., 1948.

MANUAL OF CLINICAL THERAPEUTICS. A Guide for Students and Practitioners. Second Edition. Windsor C. Cutting, M.D. Professor of Therapeutics, Stanford University School of Medicine, San Francisco. 712 pages. Illus. Price, $5.00, flexible binding. Philadelphia: W. B. Saunders Co., 1948.

A MANUAL OF PHARMACOLOGY, AND ITS APPLICATION TO THERAPEUTICS AND TOXICOLOGY. Seventh Edition. Torald Sollman, M.D., Professor Emeritus of Pharmacology and Materia Medica, School of Medicine, Western Reserve University, Cleveland. 1132 pages. Price $11.50, cloth. Philadelphia: W. B. Saunders Co., 1948.

A TEXTBOOK OF PATHOLOGY. Fifth Edition. William Boyd, M.D. Dipl. Psych., M.R.C.P. Edin., F.R.C.P. Lond., LL.D. Sask., M.D., Oslo, F.R.C.S. Professor of Pathology and Bacteriology of the University of Toronto. 1049 pages. Illus. Price $10.00, cloth. Philadelphia: Lea & Febiger, 1947.

APPLIED MEDICAL BACTERIOLOGY. Max S. Marshall, Ph.D. With collaboration of Janet B. Gunnison, M.A., Alfred S. Lazarus, Ph. D., Elizabeth L. Morrison, M.A., and Marian C. Shevky, A.B. Division of Bacteriology, Medical Center of University of California, San Francisco. 340 pages. Illus. Price $4.50, cloth. Philadelphia: Lea & Febiger, 1947.

TUBERCULOSIS. A Discussion of Phthisiogenesis, Immunology, Pathologic Physiology, Diagnosis and Treatment. Francis Marion Pottenger, A.M., M.D., LL.D., F.A.C.P. Emeritus Professor of Medicine, University of Southern California School of Medicine; Medical Director Pottenger Sanatorium and Clinic for Diseases of the Chest, Monrovia, California. 597 pages. Illus. Price $12.00, cloth. St. Louis: C. V. Mosby Co., 1948.

HERNIA. Anatomy, Etiology, Symptoms, Diagnosis, Differential Diagnosis, Prognosis and Treatment. Third Edition. Leigh F. Watson, M.D., F.I.C.S. Certified by the International Board of Surgery; Formerly Associate in Surgery, Rush Medical College, Chicago; Formerly Assistant Professor of Surgery, University of Oklahoma Medical School, Oklahoma City. 732 pages. Illus. Price $13.50, cloth. St. Louis: C. V. Mosby Co., 1948.

OCCUPATIONAL MEDICINE AND INDUSTRIAL HYGIENE. Rutherford T. Johnstone, A.B., M.D. Consultant in Industrial Health; Lecturer at the University of California, Los Angeles; Formerly Assistant Professor of Medicine, University of Pittsburgh School of Medicine; Formerly Director of Department of Occupational Diseases, Golden State Hospital. 604 pages. Illus. Price $10.00, cloth. St. Louis: C. V. Mosby Co., 1948.

ADVANCES IN MILITARY MEDICINE. Made by American Investigators Working Under the Sponsorship of the Committee on Medical Research. Edited by E. C. Andrus, D. W. Bronk, G. A. Carden, Jr., C. S. Keefer, J. S. Lockwood, J. T. Wearn and M. C. Winternitz; Associate editor Tuckerman Day. 900 pages. Illus. Price $12.50, 2 vols., cloth. Boston: Atlantic Monthly Press, Little, Brown & Co., 1948.

SEXUAL BEHAVIOR IN THE HUMAN MALE. A. C. Kinsey, Professor of Zoology, Indiana University; W. B. Pomeroy, Research Associate, and C. E. Martin, Research Associate. 804 pages. Illus. Price $6.50. Philadelphia: W. B. Saunders Co., 1948.

Even without its well-conducted publicity campaign, this book would be a best seller, because of its title. To compare it to James Thurber's "Is Sex Necessary?" —or call it the medical "Forever Amber" is unfair, as the authors have done a magnificent job in assembling statistical data regarding the sex practices in the human



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male. The subject has been approached in a frank, honest, intelligent manner. While the subject matter will not be shocking to the physician, the high incidence of the various unconventional sexual practices as reported in this study may be astounding even to him. The authors draw their conclusions from the study of 12,000 interviews. When one realizes how far off the *Literary Digest* was several years ago in picking the winner of a Presidential poll, one may hesitate to put implicit trust in such statistical studies. Also, it is not clear in some instances at what time of life these sexual aberrations took place. Such practices in childhood would have different significance, both moral and physical, as compared to those in adults. Another weakness is the tendency of the authors to rationalize about the statistical data.

As the authors state "The social values of human activities must be measured by many scales other than those which are available to the scientist. Individual responsibilities toward others in the social organization, and the long-range outcome of behavior which represents the individual's response to the stimuli of the immediate moment, are things that persons other than scientists must evaluate. As scientists, we have explored, and we have performed our function when we have published the record of what we have found the human male doing sexually, as far as we have been able to ascertain that fact."

Numerous charts and tables are included in the book. The subject matter is of particular interest to sociologists, psychiatrists and the urologists. All in all, the authors have done an excellent job with a difficult subject.

CHARLES E. REA, M.D.

A PRIMER OF CARDIOLOGY. George E. Burch, M.D., F.A.C.P., Associate Professor of Medicine, Tulane University School of Medicine; Senior Visiting Physician, Charity Hospital; Consultant in Cardiovascular Diseases, Ochsner Clinic; Visiting Physician, Touro Infirmary, New Orleans; and Paul Reasor, M.D., Instructor in Medicine, Tulane University School of Medicine; Assistant Visiting Physician, Charity Hospital, New Orleans. 272 pages. 203 illus. Price $4.50. Philadelphia: Lea & Febiger, 1947.

"A Primer of Cardiology" deals chiefly with the physical diagnosis of heart disease with the subjects of etiology and treatment being outlined only briefly.

Visual education is used and perfected to a high degree. The hemodynamics of normal and abnormal heart sounds are illustrated diagramatically. The timing of the heart sounds and murmurs are visualized by superimposed tracings of carotid pulse wave, venous pulse wave, electrocardiogram and phonogram tracings.

This book is highly recommended for the student and as a refresher in physical diagnosis.

BURTIS J. MEARS, M.D.

THE OCULOROTARY MUSCLES. Richard G. Scobee, B.A., M.D.; Instructor in Ophthalmology, Washington University School of Medicine, St. Louis, Mo. 359 Pages. Illus. Price $8.00. St. Louis: C. V. Mosby Co., 1947.

The author has taken a difficult subject and has covered the field from various angles, preferring to divide the work into five headings and then dividing the whole into twenty-nine chapters. This, at first glance, seems to complicate an already complex subject, but it works out well in the text and when once gone over makes it more satisfactory for subsequent reference.

The author states in his preface that he has adhered to the theory of Chavasse that a paretic muscle will generally regain more of its tonus if its antagonist is weakened, rather than to shorten the paretic muscle, and that the physiological results are improved.

The text has many excerpts and illustrations from current works on ophthalmology. Some chapters seem to have been treated briefly, but in the space of three hundred and fifty pages it would be burdensome to give a more full account, as it would defeat the object of the book.

Bibliographic references follow each chapter and give a ready reference to the specific subject treated in each chapter.

This work represents Dr. Scobee's point of view on the oculorotary muscles. When a man has spent as much time and patience in a difficult field, his viewpoint is worthy of careful attention to those who would be best benefited by a better knowledge of ophthalmology.

J. C. B.

COMMUNICABLE DISEASES. Franklin H. Top, A.B., M.D., M.P.H., F.A.C.P., Medical Director, Herman Kiefer Hospital; Clinical Professor of Preventive Medicine and Public Health, Wayne University College of Medicine; Extramural Lecturer in Infectious Diseases and Epidemiology, School of Public Health, University of Michigan; Consultant, Preventive Medicine Section, Surgeon General's Office, United States Army; and others. 992 pages. Illus. Price $8.50. St. Louis: C. V. Mosby Co., 1947.

The second edition of this highly useful book has been brought up to date in the rapidly advancing field of treatment. Fourteen new chapters have been added which make the book comprehensive in its coverage of

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The illustrations are adequate and the thirteen color plates are above average. The book is recommended for all those who treat communicable diseases.

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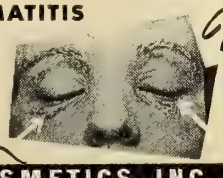
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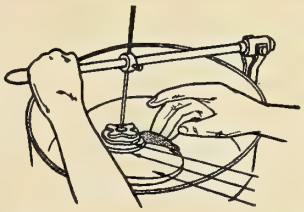
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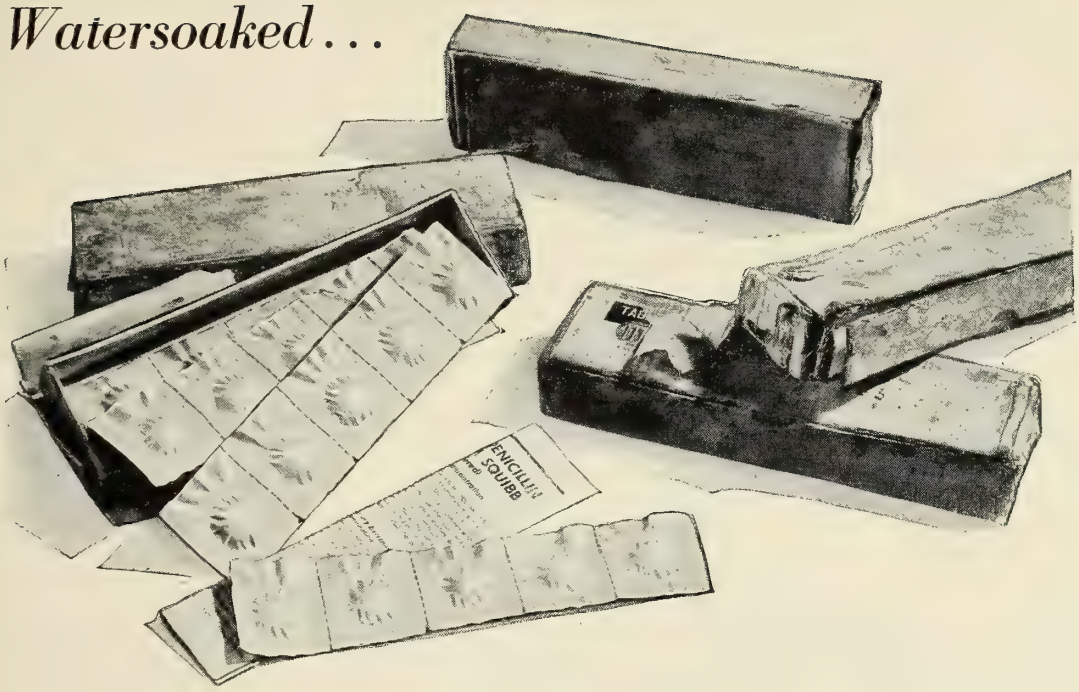
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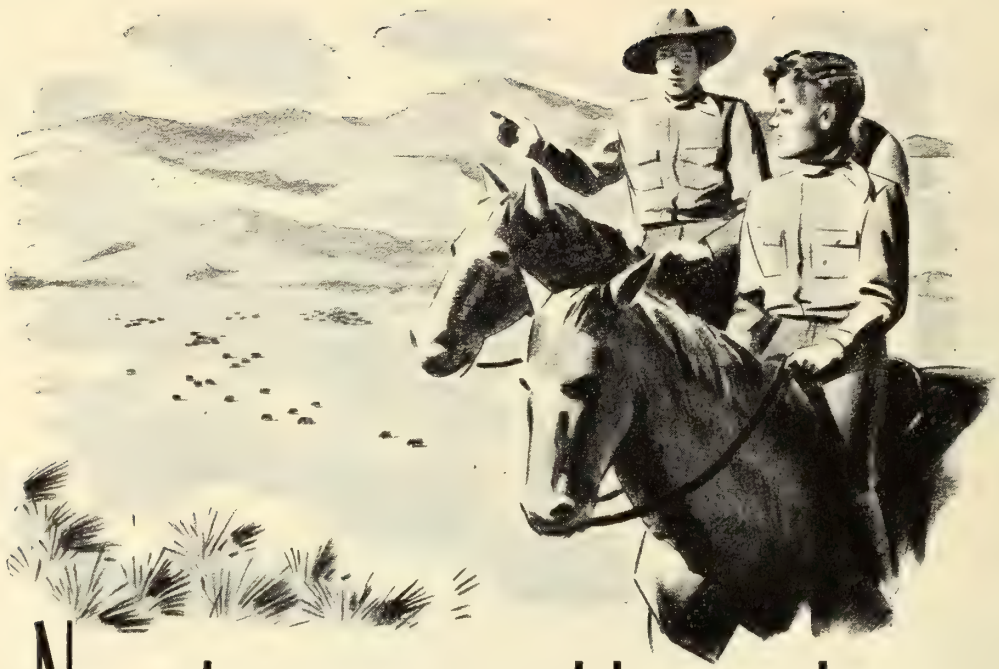
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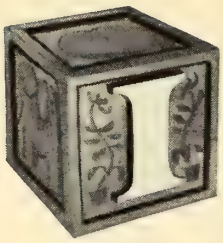
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3. Fuchs, A.M., et al., Jl. of Allergy 18:385, Nov. 1947.

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2. Levine, S. Z.: J. A. M. A., 128:283, May 26, 1945.
3. Schroeder, L. J. et al: J. Nutrition, 32:413, Oct., 1946.

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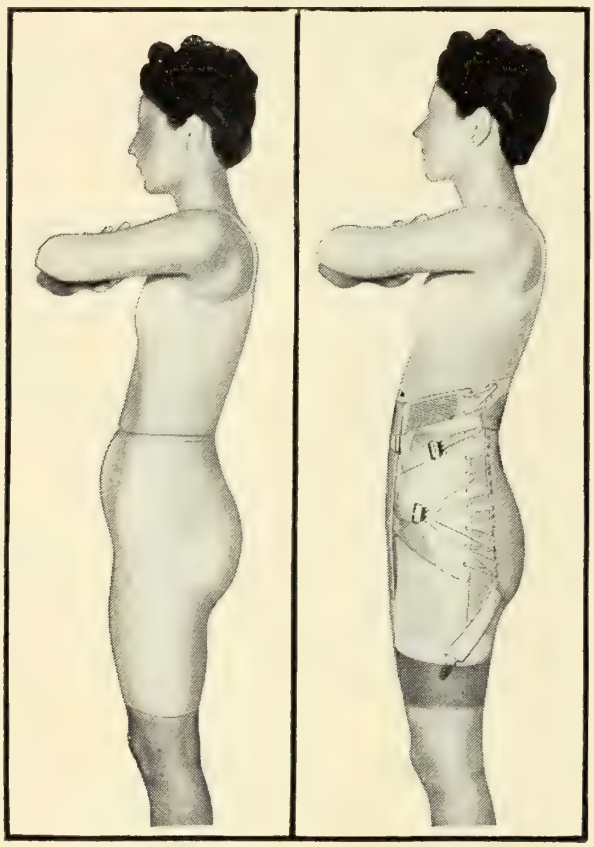


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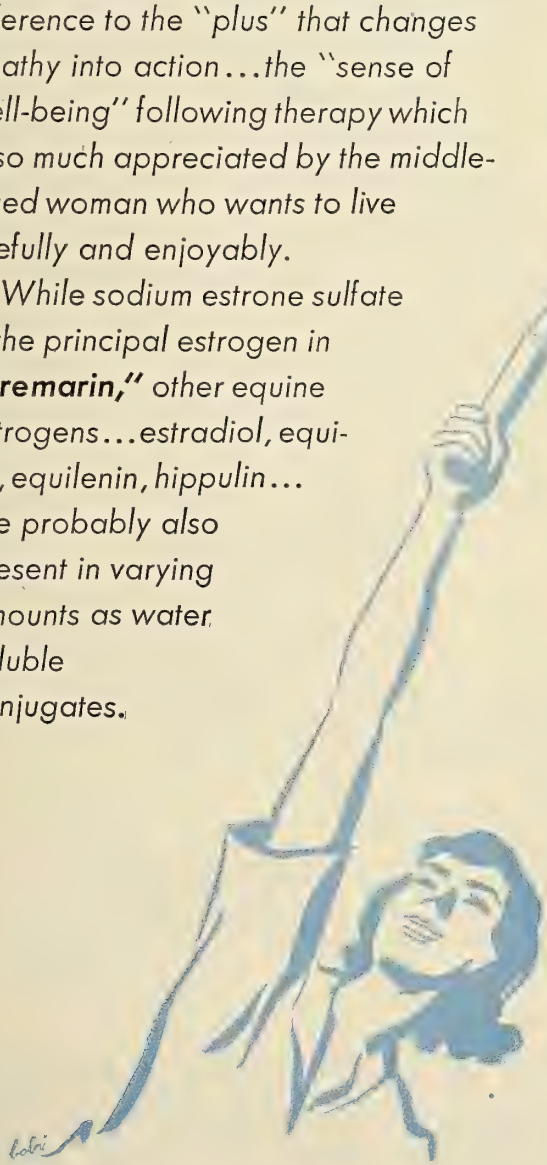
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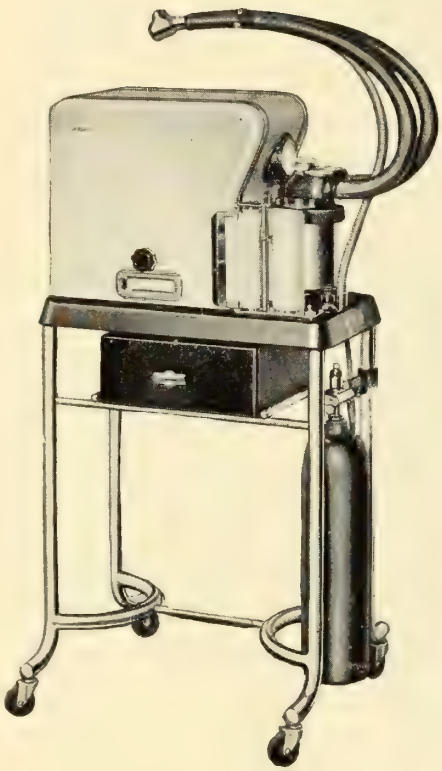
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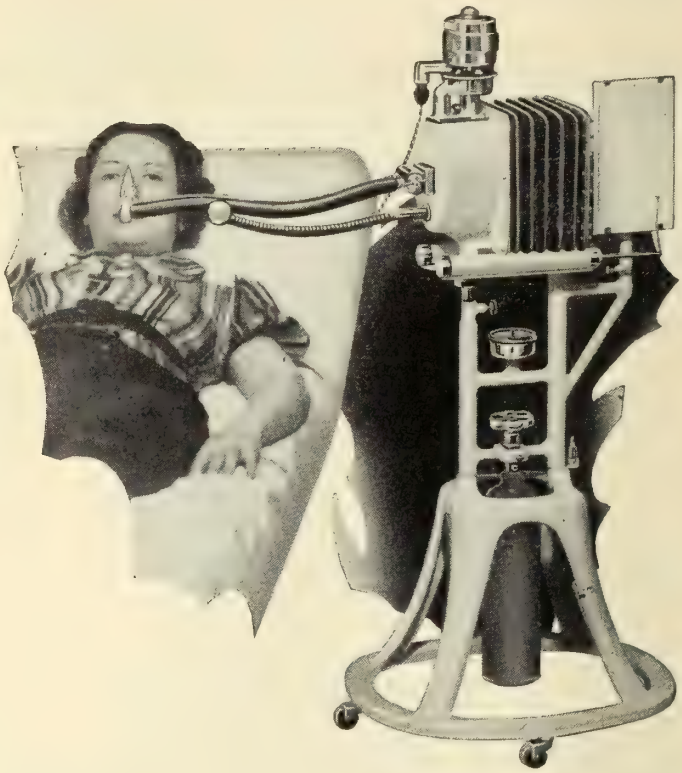
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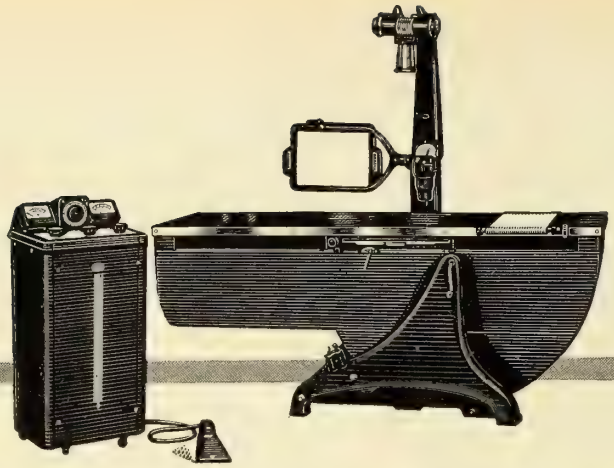
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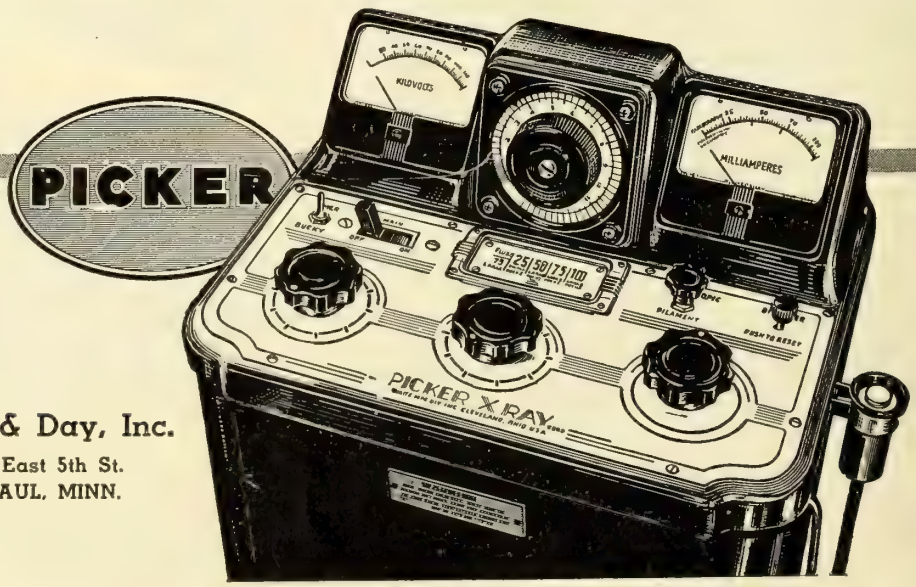
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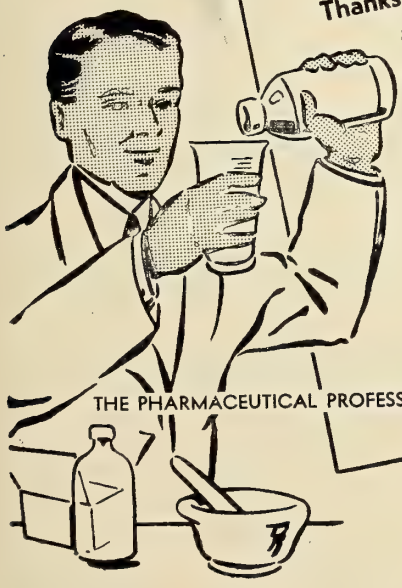
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*Snyder, M. L., Kiehn, C. L. & Christopherson, J. W., Mil. Surg. 97:380, 1945.

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Minnesota Medicine

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CO-OPERATION BETWEEN THE PHYSICIAN AND THE CANCER SOCIETY

A. E. CARDLE, M.D.

President, Minnesota State Medical Association
Minneapolis, Minnesota

THE common aim of both the medical profession and the American Cancer Society is cancer control. The society has certain means with which it hopes to aid in this control. The medical profession also has certain ways in which it hopes to aid. There must, of course, always be the most friendly understanding between these two as to methods and policies. For after all, the "control of the disease" is the goal to be achieved, and all ideas must point to this goal. I wish, therefore, to point out briefly the progress which is being made in this fight for cancer control.

Cancer control today is fortunately not the hopeless problem that it was a few years ago, and the untiring efforts of the American Cancer Society are contributing substantially to the progress being made. This organization, with all of its component parts, can take just pride in the fine record of achievement it has made since its founding in New York in 1913, while realizing that the task which lies ahead for it is still an infinitely challenging one.

The society's three-pronged attack on the disease—research, education and service—is doing much to dispel the gloomy atmosphere that has surrounded cancer, and to replace with hope the pessimism with which this disease has been regarded in years past. The American Cancer Society now has a permanent national program for educating the general public on cancer. This program is recognized and fully approved by the medical profession. Intensive educational campaign in the various types of cancer, such as cancer of the breast or of the uterus, are bearing fruit as more and more women become alert to the danger signals and seek help in time. Literature, films, exhibits and speakers have been provided on a broad scale. The medical field representatives of the society are moving about the country stimulating and directing local interest and activity wherever their help is desired. This is of utmost importance. The society's program was formally endorsed by the House of Delegates of the American Medical Association in December, 1945. Noteworthy is the fact that the society has always worked in close co-operation with the medical association—at the national, state and local levels. All of its literature is either prepared or carefully scrutinized by fully qualified medical authorities. Its projects have always been closely supervised by doctors, and all programs have medical approval before they are instituted.

The medical profession is also battling this disease on a steadily increasing scale. Cancer committees of state and county medical societies have been organized to help with educational work among medical men. The Minnesota State Medical Association appointed a cancer committee in 1919 and continues to maintain it. The importance of the cancer committee of the state medical association cannot be overemphasized. In several states, including our own, the cancer committee has prepared scientific booklets and pamphlets for distribution to practitioners to acquaint them with the latest methods of cancer diagnosis and treatment. This activity, in turn, has helped to change many a doctor's attitude toward the disease.

Much credit is due members of the Women's Auxiliary whose unceasing efforts in the field of cancer education are producing especially encouraging results. Much of the work carried on

Read at the annual meeting of the Minnesota Division, American Cancer Society, January 20, 1948, University Campus, Minneapolis.

by these women is directed at children of school age, and I believe everyone would agree that if fullest public co-operation in the battle against cancer is to be attained in the future, it must stem to a large degree from properly educating now the children who will be tomorrow's citizens.

Another group having a tremendous influence for good in the cancer fight is the American College of Surgeons. This body has demonstrated the genuine desire which the medical profession has generally, that is, to co-operate with other responsible groups in the cancer control field and to see that the highest possible standards are maintained in the care and treatment of cancer patients. Through the efforts of the American College of Surgeons, cancer clinics with qualified personnel and adequate equipment are being established throughout the country. Starting with only a few such clinics, there are now well over 400. The College inspects them and approves only those maintaining established standards. The educational effect of this practice is very noticeable. People today demand better and more thorough examinations and more careful diagnosis in cases of suspected cancer than they ever did before these high-type cancer clinics were established.

The nature of cancer has an important bearing on the type of control program that can be carried on. Not only must the disease be fought, but so must fear of the disease, which in uninformed or partially informed minds can and often does approach terror. Because of this deeply rooted fear of cancer, any facts which are released concerning the disease must be presented very impersonally, yet, at the same time, the facts themselves—the symptoms of the disease, its diagnosis and treatment—are of a highly personal nature. Confidence must be built up in the minds of the public, and yet hopes must not be raised unduly. Truth and only truth must be presented, but it must be presented from the positive, optimistic angle. Here, doctor and lay worker have an obligation to co-operate fully for best results. There must be complete understanding on the part of both doctors and patients of the relative merits of surgery and radiology in cancer therapy—overenthusiasm for one must not be allowed to overshadow the other. The need for careful and accurate physical examination, whether cancer is or is not suspected, is vital. Superficial diagnoses must not be tolerated, and they can most quickly be abolished when an intelligent lay public spurs the medical profession to put forth its best efforts.

Cancer education would be meaningless without facts with which to work. These facts are brought to light, one by one, in scores of countless laboratories by painstaking research workers. During the war we became aware of the life-saving potentialities of scientific research. Penicillin, sulfas, dried blood plasma and other wonders were rushed from the laboratory to the firing line, where they helped to save thousands of young men who would otherwise have died. Today, research in cancer faces a future of limitless possibilities. For example, research has shown how to produce and control the disease in laboratory animals. It has revealed also the difference between the normal cell and the cancerous one. Support for this all-important research is badly needed. Fortunately, several organizations including the American Cancer Society are extensively supporting cancer research, for cancer research needs financial support and trained workers. More substantial support of the cancer laboratory will pay big dividends in probing cancer's secrets, and the only way we can ever conquer cancer is to learn *all* of its secrets.

Here in Minnesota, where cancer claims over 4,000 lives annually, several research projects are being developed. Recently approved by the medical Association was the establishment of a Tumor Registry and Statistical Research Service at the Minnesota Department of Health. This project was created to fill the need for more information on the general cancer picture in the state. Up to the present time, the only statewide record of this disease has come from reports of cancer deaths to the division of vital statistics. Much valuable information on cancer cases, living and dead, is available from hospital records. In the hope that comprehensive information about cancer in Minnesota will lead to better understanding of the problem, the Cancer Control Division of the State Health Department is planning, by means of the tumor registry, to carry out a statewide statistical study of the cancer situation in Minnesota and to supply the medical profession of the state with all the available data. This will include information regarding the incidence, types, forms of treatment, facilities available for diagnosis and treatment, results of different types of treatment, and so on.

It is contemplated to carry out this study for a period of years by collecting data from reports of cancer cases by hospitals, clinical pathologists and dermatologists. The Minnesota Hospital Association has pledged to support the project. Hospital record librarians will co-operate in assembling the data. Clinical pathologists will be requested to send in copies of reports on tissue examinations which are positive for cancer. Reports of autopsies on cancer cases will be obtained, if possible, from hospital records. Skin specialists will be asked to report on cancer cases seen by them, since such cases often do not enter the hospital. In all, every attempt will be made to obtain as complete data as is possible.

The legal liability of a physician or hospital in giving information which might be considered privileged has been raised. The attorney general has ruled, however, that the health department can require such reports, thus exempting the physician and the hospital from responsibility. In the project, the health department will employ experts to file and interpret the data. Every modern device will be employed for filing and analyzing the material in the reports, and when assembled, it is planned to publish the findings and make the information gleaned from the project available to the medical profession of the state.

Cancer has often aptly been described as a silent disease in its early stages, since all too often cancers go undiscovered until too late. Here, then, is another challenge for the field of research: to seek methods which may detect earlier than otherwise not only cancer but precancerous conditions or areas of chronic irritation which might lead to cancer. That is the idea behind the formation of the cancer detection center. At the cancer detection center a group of apparently well persons will be furnished a prescribed physical examination with special emphasis on conditions which might become cancerous. These people, all over the age of forty-five, will be studied and observed over a certain period of time. A sharp rise in the frequency of cancer occurs in men and women after this age. Therefore, if patients forty-five or over are selected for study, it is entirely possible that much valuable information may be obtained. It is of prime importance that the persons selected for study be in apparent good health. This is only logical, since the persons most often claimed by cancer are apparently well—until it is too late.

In establishing standards for approval of cancer detection centers, the American College of Surgeons and the American Medical Association agreed that there should be definite limitations on what a detection center could do. It was decided that a detection center should concern itself primarily with investigation and research and that it should not treat patients. Therefore, each person is given a thorough physical examination with particular attention to conditions or areas which might develop cancer. When cancer is discovered, the patient is referred to his own family doctor, who is given a complete report on findings at the center. Establishment of such a center is a tremenrous forward step, and its success, of course, will depend upon the attitude and cooperation of all people involved.

The patient himself is the first line of defense against cancer. It is up to him to know the danger signals and to seek help when they appear. At this point, tactful education, such as is carried on so splendidly by the American Cancer Society, makes its greatest contribution. Only the prospective patient can recognize the danger signs, and he must therefore be the person to report his suspicions to his doctor. Proper education will not only counteract fear and dread but also the false modesty which for some women has proved an ally of death. In the past, persons have avoided medical aid until the deadline for saving their lives is past, for fear of being laughed at for their suspicions, or of being called a "cancer phobe"; for fear of embarrassing examinations, fear of learning the truth, desire to avoid worrying the family, fear of doctors and of maiming illness, fear of surgery. Doctors can do much to combat these emotional reasons. A friendly, helpful attitude on the part of the examining physician will do much to reassure a timid or distressed patient.

Fears also arise from economic reasons—inability to meet the cost of medical care, financial obligations to dependents, fear of losing a job. Lack of funds need not discourage a patient from seeking competent medical service, for all physicians of recognized ability give due consideration to the financial situation of the patient, and all reputable hospitals regulate their charges accordingly.

Finally, there are those people who delay their visit to the doctor because of a lack of knowledge

about cancer: they have no pain, they can go on working, hence they cannot be sick. Or perhaps their cancer resembles some common ailment like a cold sore or a case of eyestrain. Then, too, they may have interpreted their own symptoms and may be treating them with the help of family, friends, home remedies, patent medicines—or, even worse, they may have fallen victim to a cancer quack, of whom there are many, I am sad to say. Under no circumstances is it wise to select for treatment of cancer a person who advertises a cure for cancer or demands that a fee be paid in advance, or who is not willing to call another physician in consultation when necessary. Such methods are not practiced by reputable medical men. In view of the seriousness of every cancerous conditions and the frequent rapidity of its progress, it is criminal to waste valuable time and money by trifling with unscientific remedies or nonmedical persons who are not competent to treat this disease.

Thus the patient is the first line of defense against cancer. The second line of defense is the physician. The medical profession is recognizing more and more its heavy responsibility to strengthen our defenses against all cancer. The medical association of our state and those of several other states have published manuals for physicians containing scientific facts on cancer and have attempted to stimulate interest in the disease by conducting lectures and short postgraduate courses on cancer. Even though health education in cancer is making people "cancer conscious," it is recognized that the patient cannot diagnose or cure his own cancer. All one can do is watch for the signs and consult a physician immediately if any such signs appear. From that time on, assuming the patient is co-operative, the responsibility rests upon the physician.

Now it is all very fine and impressive for the members of the medical profession to work together to educate the public and to support cancer control collectively. But after all, it must be admitted that the family physician to whom the patient will probably go first is the No. 1 man on the firing line. The saving of cancer patients is dependent on keen observation and knowledge on the part of the practitioner, not the surgeon or specialist. The family doctor must read the signs and take appropriate action, or refer the patient to someone who can. The medical profession is not quite content with telling the public what ought to be done. It has also made certain through its journals, meetings and postgraduate courses that doctors have every opportunity to prepare themselves to render the best possible service to their cancer patients through the possession of up-to-date knowledge and techniques. Here is where the doctors not only co-operates best with the cancer society, but where he lives up to the ideals of medicine.

There is a third line of defense against cancer—and it is highly important, for without it, the other two defenses, important as they are, will be worthless. This final line of defense is the doctor trained in pathology, surgery or radiology —the man who can actually eradicate cancer from the human body. Accurate diagnosis is of no avail without competent treatment.

Altogether, the recent trends in cancer mortality are encouraging and there is reason to believe that real gains are being made, that cancer deaths are beginning to come under some control. During the past ten years, noticeable progress has been made, particularly among women. The educational campaign is progressing rapidly and with good results. Here in our state the Minnesota Division of the American Cancer Society maintains an excellent information service. Last year, as one indication of the public interest stimulated by the Minnesota Division, there were received 900,000 actual requests for information on cancer, which were filled by the Division. The Minnesota Division has also been working through the schools and has printed a study outline on cancer for secondary schools, which is correlated with the State Education Department's health education course. It is entirely optional, but students are becoming interested, as evidenced by the 16,000 requests for cancer information from high school students received last year.

Steadily increasing control over cancer may be attributable to other factors of education. The close relation, for example, between cancer of the cervix of the uterus and neglected birth injuries is recognized. Improved obstetrical and maternity care is undoubtedly greatly reducing such cancers among women. Similarly, attention to mouth hygiene is reducing cancers of the mouth. But far more important in the total picture is the constantly increasing number of physicians trained to deal effectively with the disease, the marked increase in public and private facilities

(Continued on Page 258)

VAGOTOMY IN THE TREATMENT OF IDIOPATHIC ULCERATIVE COLITIS AND REGIONAL ENTERITIS

CLARENCE DENNIS, M.D., FRANK D. EDDY, M.D., and DARRELL WESTOVER, M.D.
Minneapolis, Minnesota

AS one of us reported to the Minneapolis Surgical Society three years ago, the proper application of surgical therapy to idiopathic ulcerative colitis at the University of Minnesota Hospitals in the years 1934 to 1944 resulted in a drop in mortality rate from 28 to 8 per cent. The figure of 8 per cent has not changed appreciably since that time, and the great majority of the survivors of ileostomy and colectomy have been restored to good health. About one-third of them in the past three or four years also have regained use of the rectum by ileoproctostomy.

Although the over-all figures appear fairly satisfactory, and most of the patients return to active work, one cannot help being impressed by: (1) the radical nature of the surgery needed; (2) the deforming consequences thereof; (3) the psychic trauma thus inflicted on already somewhat unstable personalities; (4) the occasional annoying complications of partial obstruction at the ileostomy, ascending ileitis, and skin erosion by the ileostomy discharge, and (5) finally, the occasional surgical catastrophe which still we cannot escape entirely.

In view of these considerations, a simpler and more fundamental approach to the problem is needed. Various measures have been suggested. Bargen's vaccine has helped in some cases; streptomycin by mouth has appeared to bring marked temporary improvement in a few; sulfathaladine has been disappointing; folic acid, in the hands of Dr. Marcus Keil of the Department of Medicine, has been of little help; and use of tetraethyl ammonium bromide, in the hands of Dr. Russell Wilson of the Department of Medicine, has had an adverse effect in five cases out of seven studied. We were aware of the work of Laurence Martin, but have not as yet employed thiouracil.

Employment of division of the vagus nerves was precipitated by the case of a twenty-year-old girl who previously had all her colon and five-sixths of her ileum removed for severe idiopathic ulcerative colitis and ascending enteritis. Severe recurrent enteritis in the remaining six feet of intestine in October, 1946, demanded some active therapy after all known conservative measures had failed. Vagotomy was suggested by Dr. C. J. Watson, chief of the Department of Medicine at the University of Minnesota. In combination with a revision of the ileostomy, it resulted in the first solid stools she had had in four years, weight gain, and a temporary return of moderately good health. Unfortunately, her condition had become critical during operation, and the chest had to be closed hastily and without performing a complete vagotomy. The improvement was temporary, and, therefore, in September, 1947, several large additional vagus fibers were resected. No definite improvement seemed to follow this second procedure. She remains a problem, with abdominal cramps and some ileostomy difficulties due to the high intestinal secretions.

Employment of vagotomy for cases of idiopathic ulcerative colitis not previously subjected to operation seemed in order. Four such cases, all of very low grade, were subjected to vagotomy in the last three months of 1946. No further divisions were done for six months in order that rather careful evaluation might precede the use of the procedure in any larger group of patients. Symptomatic relief in these four cases and the finding of normal proctoscopic appearances led to the routine application of vagotomy to all available cases of idiopathic ulcerative colitis and regional enteritis, on the supposition that only by fairly wide trial could the method be fairly evaluated.

Transthoracic vagotomy has been employed routinely in fear of aggravation of the disease through handling of the colon by employment of the subdiaphragmatic approach. Recollecting a cancer incidence of some 12 to 13 per cent in patients having had the disease more than five years, we have been careful to exclude this complication by thorough roentgen and proctoscopic studies. In one case, a subdiaphragmatic approach was

From the Department of Surgery, University of Minnesota Hospitals, and the Department of Surgery, Minneapolis General Hospital. Supported by a Research Grant from the Graduate School of the University of Minnesota, by the Patients' Fund for Clinical Research, and by the George E. Durkee Fund for Surgical Research.

Presented before the Minneapolis Surgical Society, December 4, 1947.

used because other studies had not been convincing.

As of the present time, twenty-three patients in this series have had vagotomy performed. One developed cardiac arrest on the table and recovered only after cardiac massage and conversion to ventricular fibrillation, in turn controlled with procain; she died nine days later, apparently of myocardial infarction. Of the remaining twenty-two, one patient had only a functional diarrhea; three had regional enteritis in addition to ulcerative colitis; four had had previous ileostomy and colectomy and had vagotomies for ascending enteritis or disease in the remaining rectum; two had had pervious colectomy and ileoproctostomy; two had had ileostomy only, and one had had ileostomy and partial enterectomy with simple closure of the ileostomy at the time of the vagotomy.

As Table I indicates, three patients have been operated upon too recently to allow evaluation. Two of the nineteen patients, followed a month or more, are worse. One of these had a lead-pipe colon resulting from fourteen years of disease; his stools have increased from eighteen a day to twenty-five a day. The other had had his ileostomy and colectomy elsewhere, and had a vagotomy performed in the false hope that an active proctitis might subside.

Fourteen of the nineteen patients have had definite improvement, and five of these fourteen have become entirely asymptomatic.

The most striking case is that of a boy of nineteen with a five-week history of diarrhea and septic fever and a loss of 58 pounds over a longer period. Roentgen study had shown not only diffuse colitis, but also regional enteritis involving the jejunum and the ileum. The stools numbered eight to twelve a day. Following three days of preparation, vagotomy was done. There were two stools in the next four days, and he became afebrile in forty-eight hours and has remained so. He has gained over 30 pounds in the two and one-half months since operation, now has one formed stool a day, and, as the barium enema shows, the colon has improved vastly. Studies on the small bowel have been difficult to do because of slow emptying of the stomach and the virtual impossibility of intubation of the duodenum after vagotomy; but they nevertheless show marked improvement also.

TABLE I. VAGOTOMY IN IDIOPATHIC ULCERATIVE COLITIS

Type of Surgery	Result				Totals
	Worse	Same	Improved	Asymptomatic	
Vagotomy alone	1	2	5 (a)	4 (bc)	12
Vagotomy plus:					
(1) Previous ileostomy and colectomy	1 (d)	1	2 (e)		4
(2) Previous colectomy and ileoproctostomy			1	1 (c)	2
(3) Previous ileostomy and partial enterostomy, and closure of ileostomy with vagot.			1		1
Totals	2	3	9	5	19

There has been one surgical death; 3 cases are too recent to evaluate. (a) One case of functional diarrhea. (b) Amebae found in one case. (c) One case Crohn's disease plus ulcerative colitis. (d) Increased disease in remaining rectum. (e) Gastroenterostomy required in one case.

In general, the best clinical results have followed vagotomy in cases of short duration or with mild demonstrable fibrosis. The rationale of vagotomy in this disease is based on the demonstration of Rolf Lium that postganglionic sympathectomy in dogs is followed by lesions suggesting clinical colitis in man, and on the marked relief of gastrointestinal spasm observed by L. R. Dragstedt to follow division of the vagi for duodenal ulcer. Extensive laboratory studies by Wangensteen, Friesen, and Lillehei have failed to demonstrate any abnormality in digestive enzymes in these cases or any changes in enzymes or motor activity of the ileum following division of the vagi in dogs. Prudden and associates have, however, shown changes in lysozyme activity in colitis.

Clinical studies on candidates for vagotomy have been carried out preoperatively, during the patient's postoperative hospital stay, and in half the cases some three or more months later. Fur-

ther studies are in progress. The studies include gastrointestinal stasis x-rays, charcoal transit times through the intestinal tract, barium enema, proctoscopic examination, histamine gastric analysis, Hollander insulin test for gastric secretion, twelve-hour (overnight) gastric suction specimen, electrocardiogram, and a chart record of stools as to amount, character, and content of blood, pus, or mucus, both by gross appearance and by laboratory examination.

Gastrointestinal studies postoperatively have displayed marked slowing in gastric emptying, the stomach rarely being empty of barium in twenty-four hours and usually containing a trace or more at forty-eight to seventy-two hours. Our stasis studies also indicate prolongation of intestinal transit, even when gastric emptying begins immediately.* The same has been true in two patients subjected to study in connection with vagotomy for duodenal ulcer. Roentgen observations on the status of the small bowel as to active disease or changes in the mucosal pattern have not been entirely satisfactory. In three cases with well established regional enteritis (pathological, or proctoscopic demonstration after ileoproctostomy), only one was demonstrated by radiological techniques.

Four patients have improved from a radiological point of view to such a point that the barium enema shows no abnormality. Proctoscopic examinations have shown marked improvement in a majority of patients, in some showing striking improvement within two weeks after operation.**

The triple-histamine gastric analysis has been routine throughout most of this study. In two patients, vagotomy was followed by total loss of free hydrochloric acid response to triple histamine. Most of the others responded to vagotomy with a considerable drop in response to histamine.

By means of the Hollander insulin test for gastric acid secretion, we had postoperative evidence in three cases that section of the vagi was incomplete. One of these was the first case in this series, and she had to have a second vagotomy. The other two patients are symptom free.

Twelve-hour gastric specimens have not been consistent. Nine patients have shown marked reduction in volume. The rest have remained unchanged or have increased slightly, with one exception. In this instance, the patient developed gastric retention, necessitating gastroenterostomy. The hydrochloric acid levels compare in general with the findings of Dragstedt, Grimson, Moore, Walters, and others in their vagotomy series for ulcer of the stomach and duodenum.

Electrocardiograms in most instances have been unchanged by operation. In three instances minor changes occurred; in one a marked tachycardia occurred; and in one, cardiac arrest occurred with the start of manipulation of the mediastinum.

The charcoal transit time has been reguarly prolonged after vagotomy. Eight patients who showed blood, pus, or mucus, or combinations of these findings preoperatively, have stools entirely free of them after vagotomy. The tendency has been toward more formed stools, particularly in the early cases in whom no other surgery had previously been performed.

Conclusion

Vagotomy has been undertaken in twenty-two cases of idiopathic ulcerative colitis and in one case of functional diarrhea. One patient died of cardiac complications without completion of the vagotomy. Two patients are definitely worse, three are unchanged, fourteen have improved, and three have not been operated upon long enough for evaluation. Two of the excellent results occurred in patients also suffering from regional enteritis.

Patients with longstanding disease and those presenting much fibrosis of the bowel wall seem to have done less well than those in the acute phase and those having good bowel elasticity. This is perhaps fortuitous in view of our high cancer incidence in the older patients. We still cannot unerringly discriminate which patients will be unchanged or injured by division of the vagus nerves. It should once again be emphasized that vagotomy should not be employed promiscuously, but only where serious study and evaluation of the method are the aims.

*The authors wish to express their thanks to Dr. L. G. Rigler and the members of his department for their interest and help in the execution of these studies.

**The authors wish to thank Dr. William C. Bernstein, Dr. Howard Frykman, and Dr. Victor Swanson for their interest and co-operation in performance of the proctoscopic examinations.

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GASTRIC NEURECTOMY (VAGOTOMY) IN THE TREATMENT OF DUODENAL ULCER

Anatomic Considerations

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AN ANATOMIC investigation of the course and distribution of the right and left gastric nerves has recently been completed. According to Cunningham,[1] "the two vagus nerves, after forming the posterior pulmonary plexuses, descend to the esophagus, where they form with each other and with branches of the sympathetic, the esophageal plexus. From this plexus, two nerves pass downward, one on the front and one on the back of the esophagus, through the opening in the diaphragm. Each of these nerves contains fibers from both vagi, and they are termed the *anterior and posterior gastric nerves.*" Hereafter in this paper, the term "right gastric nerve" will replace the term "posterior gastric nerve" and the term "left gastric nerve" will replace the term "anterior gastric nerve." This is done because, in our observations, the right nerve was not always posterior and the left nerve was not always anterior in position.

The results presented herein are based on 100 dissections made at necropsy. The results of eleven additional dissections made on the bodies of children were not included. Although the course and distribution of the gastric nerves in these eleven instances did not differ from that found in the bodies of adults, the results were not included in the statistical analysis because of the uncertainty, at the beginning of the dissections, of the accuracy of observations made on small nerve trunks. These 100 dissections were made on the bodies of fifty-six men and forty-four women whose ages had ranged from twenty-four to eighty-four years.

Generally speaking, it was observed that the gastric nerves arose from the esophageal plexus at about the level of the bifurcation of the trachea. The right and left gastric nerves coursed caudad and, generally speaking, ultimately terminated on the stomach. There were, however, certain qualitative variations that permitted classification of the dissections into four groups.

In 92 per cent of the 100 dissections, the gastric nerves took origin from the esophageal plexus on the anterior wall of the esophagus behind the bifurcation of the trachea and behind the main bronchi. As the gastric nerves coursed caudad, many intercommunicating branches between the right and left trunks were observed. Furthermore, small fibers that coursed anteriorly and inferiorly over the vertebral column and the aorta were added to the gastric nerves. Sometimes intercommunicating branches were seen to enter the musculature of the esophagus and either lose their identity or emerge onto the anterior surface of the esophagus at some more caudal position. By the time the nerve trunks and branches had reached the esophageal hiatus, a relatively large trunk had been formed. These trunks passed through the esophageal hiatus into the abdomen.

The ninety-two dissections just referred to constituted three of the four groups. The first group (64 per cent of the 100 dissections) was characterized by the fact that all of the branches between the gastric nerves and from more remote sites joined to form common trunks on the right and left sides of the esophagus somewhere between the superior aspect of the diaphragm at the esophageal hiatus and 6 cm. above the diaphragm.

In the second group of dissections (7 per cent) there were so many intercommunications between the main trunks of the gastric nerves that a plexus was formed on a major portion of the anterior surface of the esophagus.

The third group of dissections (21 per cent) was characterized by the fact that the long discrete trunks had neither additions of fibers nor intercommunications below a point 6 cm. above the diaphragm.

In the fourth group of dissections (8 per cent) any consistent or uniform course or pattern was not found. In some instances, well-formed trunks were evident from which, somewhere near the diaphragm, a well-defined branch left a main trunk, coursed laterally in the thorax and became lost before leaving the thorax. Another variation was that of a failure of the numerous branches of

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From the surgical service and under the direction of Dr. Waltman Walters with assistance from Drs. J. T. Small and J. W. Wilson. Dr. Bradley is a Fellow in Medicine at the Mayo Foundation, Rochester, Minnesota.
Read at the meeting of the Southern Minnesota Medical Association, Faribault, Minnesota, September 9, 1946.

the esophageal plexus to form into a common trunk on one or both sides. Under such circumstances, the multiple small fibers followed their course along the esophagus, some going through the esophageal hiatus, some going laterally in the thorax, so that the distribution of every fiber of the right and left gastric nerves could not be determined with certainty. Hence, in this group were found the nerves with a course and distribution which might cause difficulty for the surgeon who attempted to section the gastric nerves.

The relative position of the right and left trunks of the gastric nerves about the esophagus at the point at which they passed through the esophageal hiatus was determined.

Below the esophageal hiatus the course was remarkably constant. The right gastric nerves, the larger in 54 per cent of the dissections in this study, coursed posteriorly and to the left. About 3 to 5 cm. below the esophageal hiatus the right nerve divided to send numerous small branches to the musculature of the stomach—at least they lost their identity in the wall of the stomach. One or more branches followed along the lesser curvature of the stomach; however, the larger single branch followed along the left gastric artery. Routine dissections were not made beyond the division of the right gastric nerve into its branches, since further consideration of the course and distribution was not within the scope of this study.

The left gastic nerve, on the other hand, had a short course in the abdomen. As it came to lie on the anterior surface of the stomach, it almost immediately divided into numerous small branches which lost their identity in the serosa and musculature of the stomach.

Occasionally, a small intercommunicating branch between the right and left gastric nerves below the diaphragm was seen.

In 92 per cent of the dissections in this study distinct right and left gastric nerves could be identified at the esophageal hiatus. In 8 per cent of the dissections the arrangement of one or both gastric nerves was abnormal and irregular. Identification of such nerves, in the performance of gastic neurectomy, would require the thoracic approach.

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Discussion

Dr. John H. Grindlay, Rochester, Minn.: Ever since Pavlov's work on the nervous phase of gastric secretion (at that time, fifty years ago, he did not know there was a chemical phase), the gastric nerves have lured surgeons. The recent and broadspread interest in the vagus nerves is merely a revival of interest, and, as has usually been the case, the impetus for this revival has been given by a surgeon, Dr. Lester Dragstedt.

One difficulty has been, and is, even today, that there is no evidence to show that the immediate and sought-for effect of section of the vagi is permanent. Vanzant once showed that the value for free acid in the stomach in dogs might return to about its former level in six months or more after section of the vagi had been performed. In other words, although no free acid was found in the stomachs of her dogs during the first few months after section of the vagus nerves, she found that the ability to secrete free acid might eventually be restored.

Another difficulty is that it is not known what undesirable effects the procedure may have. There is evidence, both clinical and experimental, that troublesome functional disturbances may develop later.

It is true that Dragstedt's first vagotomy was done three and a half years ago, that Moore and Chapman did their first operation two years ago and that in most of the cases reported by these surgeons so far the patient has been benefited. Yet, because of experimental evidence that any change may be only temporary and because long experience with peptic ulcer makes one reserve judgment in respect to any operation until it has been performed in a large series of cases over a period of many years, surgeons in most medical centers, including the Mayo Clinic, are performing gastric neurectomy only in selected cases of peptic ulcer. It is believed that the final report on this operation is not due for some years and that all reports made now and for some years to come should be considered interim reports.

Patients selected for this operation at the clinic are of two general types. The first type of patient is one in whom a new ulcer has developed and who has not had relief of pain from ulcer after an adequate gastric resection. It seems justifiable to offer these patients the comparatively simple operation of gastric neurectomy on the chance that they might obtain relief.

The second group of patients consists of those with chronic, nonobstructing duodenal ulcer, in whom the nervous factor seems to overshadow other factors and for whom surgeons at the clinic believe the operation occasionally may be justified. Some of these patients are young, they have high gastric acidity with active ulcers which respond unsatisfactorily to medical treatment and they conform in a behavior pattern that suggests a prolonged and excessive nervous phase of gastric secretion.

Dr. Bradley and his colleagues have done an excellent and long-needed piece of research. There can be no dispute about their anatomic findings, as there is about clinical and experimental work in this field. If an absolutely complete division of the vagus nerves to

the stomach is necessary to effect a cure of ulcer, their work will be a great help to the surgeon. Until we have had more experience the emphasis should be, certainly, on the completeness of the operation. In the light of this work it will also be appreciated, that when, for some reason, the infradiaphragmatic approach is used, there is an approximately 8 per cent chance that the operation will be incomplete. How important this observation will be eventually, we do not, of course, know.

I should like to take a few more minutes to discuss some of the recent experimental work on this problem. Baranofsky, Friesen and their co-workers, in Wangensteen's laboratory, have reported recently that section of the vagi failed to protect animals from peptic ulcer produced by chronic histamine stimulation. Bollman and I have work in progress in which we are trying to find out whether section of the vagus nerves protects dogs from ulcer produced by the Mann-Williamson operation.* Some years ago Beaver and Mann reported that in one of their small group of three dogs whose vagi had been cut, an ulcer failed to develop after the Mann-Williamson operation. It is this one dog which has been the cause of recent dispute. I am sorry our new experiments are not yet complete.

Bollman and I have just completed a study of the effect of section of the vagi on peptic ulcer produced in dogs by cinchophen. Our dogs were given 2 gm. of cinchophen daily for six days of the week. Peptic ulcers developed about two weeks after this regimen had been started. Most of the dogs died from hemorrhage or perforation. Eleven dogs were used as controls; that is, their vagi were left intact. The vagi were cut in four dogs after an ulcer had developed. Twelve dogs had had their vagi cut at times which varied from three weeks to seven and a half months before the cinchophen regimen was started. Briefly, we found that section of the vagi did not cause the ulcer to heal in the four dogs which already had an ulcer, nor did it prevent the occurrence of an ulcer in dogs whose vagi had previously been cut. I should say at this point that we did almost as radical an operation as that of Moore and Chapman. We excised those portions of the vagi, including their esophageal branches, which extend from a point just below the roots of the lungs to the diaphragm. We were able to verify the completeness of the operation at necropsy.

Perhaps we should expect negative results from such a study. Cinchophen produces an ulcer probably because it stimulates gastric secretion directly, rather than because it stimulates the vagi. It is true also that peptic ulcer as it occurs in man is not a disease of dogs and peptic ulcer which is caused by cinchophen is not a disease with which we are concerned in man.

Nevertheless, one result of the study deserves mention. The dogs in which the vagi had been cut before they were started on the cinchophen regimen lived considerably longer than did the control dogs. The former lived almost twice as long as the latter, they lost less weight, even over the longer survival period, and their ulcers at death looked to be more chronic. The only explanation we can give is that the dogs in which vagotomy had been performed were not affected by the symptoms of ulcer and, consequently, ate better than did the controls, they lost less weight and they were in better condition to survive hemorrhage or a small, early perforation. I think this is of interest because it has been widely reported that patients who, before operation, have had continuous and intractable pain after operation awake from anesthesia completely relieved of pain.

In reference to the paper by Dr. Bradley, I should like to speculate as to whether an absolutely complete section of the vagi and all their visible branches is of importance. Certainly, results have yet to be proved to be related to the completeness of the operation. Perhaps it is necessary to interrupt only the main nerve or certain fibers in the main nerve. In our study of cinchophen-induced ulcer, two dogs which were among those with the longest survival periods were proved at necropsy to have an intact branch of one vagus nerve. One of these dogs gained weight, although he had a large ulcer which had perforated and then had become sealed off; he did not die but was killed after he had been receiving cinchophen for almost four months, which was more than twice as long as any of the control dogs had received the drug.

*The results of this study were inconclusive.

CO-OPERATION BETWEEN THE PHYSICIAN AND THE CANCER SOCIETY

(Continued from Page 252)

for treatment, and the development of new and improved techniques.

It is very likely that further progress will be achieved by advances in medical and surgical treatment and through discoveries in scientific research, provided such research is supported in the future. But even in the present state of knowledge and medical practice, many thousands of lives could be saved annually through earlier diagnosis and treatment. Cancer control is a major challenge not only to the medical profession but to the lay public as well. The final solution, if one is to be found, will be obtained only by co-operative and co-ordinated teamwork between lay leaders, as represented by the American Cancer Society, and leaders in medicine and the allied sciences—all of them working together against one of the most stubborn diseases of mankind.

RECENT ADVANCES IN THE TREATMENT OF CARDIOVASCULAR DISEASES

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IN this discussion of recent advances in the treatment of cardiovascular diseases, I will present four different phases of the field which seem to me to be worthy of special emphasis. I will not describe one of the most important advancements, the surgical treatment of congenital cardiovascular defects, because that is a special topic in itself.

First, I wish to discuss the use of penicillin in the treatment of subacute bacterial endocarditis. This disease, as is well known, formerly had a mortality rate of practically 100 per cent.[15] With the advent of the sulfonamides, used in conjunction with heparin or fever therapy, a few cures occurred. Penicillin has completely changed the prognosis in this disease. Penicillin will sterilize the blood stream and heart valves in the great majority of cases, and the small percentage of patients who die do so not because of the septicemia, as formerly, but because of congestive failure, embolic phenomena, or uremia.[2]

The important questions in treating these patients are: how much penicillin should be given per day, and for what length of time? I think we do not have the final answer to these questions. As experience has been gained, the tendency has been to raise the daily dose and give it over a longer time. A daily dose of one-half million units, given for a period of at least twenty-eight days,[2,16] would be regarded now as adequate treatment, provided the organism causing the infection was not highly resistant to penicillin.

It should be emphasized that relapses may occur, and if they do, hope should not be abandoned because such patients will usually respond to larger doses given over a longer period.[3] Relapses, when they occur, almost always do so within thirty days after cessation of treatment.

The proper route of administration of the penicillin is the subject of much controversy. Intramuscular injection every three hours is the simplest method and has given very satisfactory results.[1,2,16] There is no advantage in giving anticoagulants with the penicillin.[3,12]

Next, I wish to discuss the use of the anticoagulants, heparin and dicumarol, in the treatment of acute coronary thrombosis. Parker and Barker[10] have recently published the results of treating fifty such patients with anticoagulants. Only two members of this group developed vascular complications. This is only 4 per cent, which is in contrast to the 37 per cent with vascular complications reported by Nay and Barnes[8] in 1945 in a series of 100 cases of coronary thrombosis not treated by anticoagulants. Three previous authors[9,11,18] have also reported favorable results in the treatment of coronary thrombosis by anticoagulants. The American Heart Association is establishing a program to evaluate this therapy further by means of well-controlled studies in larger centers.

There are definite contraindications to the use of heparin and dicumarol. They should not be used unless a reliable laboratory is available for determining daily prothrombin times. They should not be used in the presence of an ulcer or a bleeding lesion, or in the presence of hepatic or renal insufficiency.

Heparin may be used for the first forty-eight hours until the dicumarol has had time to lower the prothrombin time. Then the patient is maintained on dicumarol. With dicumarol, the prothrombin time should be kept between 10 and 30 per cent of normal. It is well to continue the dicumarol for at least three weeks, as the great majority of vascular complications will occur in this interval. It should be remembered that if the prothrombin time drops too low, or if bleeding occurs, the action of the dicumarol may be counteracted by administering intravenously 60 mg. of vitamin K in the form of menadione bi-sulfite.

Next, I wish to discuss the use of digitoxin, a purified digitalis glycoside, in the treatment of congestive heart failure. While this is not a new product, I think the ease and minimal toxic effects with which a patient can be digitalized are not universally appreciated and are deserving of comment. Harry Gold and his co-workers[4,5] are chiefly responsible for demonstrating the usefulness of this drug.

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Digitoxin is almost 100 per cent absorbed from the gastrointestinal tract; therefore, the oral digitalizing dose is the same as the intravenous digitalizing dose, and there is no advantage in giving it intravenously. Digitalization is accomplished in the average patient by giving 1.2 mg. of digitoxin orally in one dose. The full effect takes place in four to ten hours. The maintenance dose is .1 to .2 mg. daily. The toxic effects of the single dose are minimal, only one patient in fifty being affected by nausea as a result of local action in the stomach, and only one in fifty affected by nausea as a result of systemic action. An occasional patient may not be fully digitalized by the single dose of 1.2 mg. In this case full digitalization can be accomplished by giving an additional .2 or .4 mg. of the drug.

It should be emphasized that the digitalizing dose should not be given if the patient has received digitalis of any kind in the previous two or three weeks.

Finally, I wish to consider briefly a method of therapy that is not new, but the significance of which has only recently come to be appreciated. I am referring to the treatment of edema by the strict reduction of sodium intake. Schroeder[14] in 1941 and Schemm[13] in 1942 were the first in recent times to advocate marked restriction of sodium intake. Wheeler, Bridges and Paul White[17] have recently confirmed the value of this restriction of sodium and have shown that, in congestive heart failure, fluids may be given *ad lib.* if the intake of sodium is markedly restricted. In the diet of White and his co-workers, the intake of sodium in hospitalized patients was reduced to 1.5 gm. of sodium chloride daily. In their ambulatory patients the regimen was less rigid, and emphasis was placed on eliminating salt from the table and from the cooking, and on using salt-free bread and butter. The reduction of the sodium ion is the important factor, chlorides having no effect on edema formation. Thus no sodium bicarbonate may be given and no medicines containing sodium may be used. White treated thirty-five patients by the low sodium regimen. All of these showed cardiac decompensation uncontrolled by ordinary methods. Of these thirty-five, ten showed great improvement, twelve showed some improvement and thirteen showed no improvement at all. Schemm thinks that, in addition to restricting the intake of sodium, it is important to have the diet acid-ash in type. He thinks fluids should not only be given *ad lib.*, but should actually be forced. The value of forcing fluids in all these patients has not been generally accepted, but the value of the low sodium regimen in uncontrollable decompensation is gradually being recognized.

As well as playing a part in the production of edema, there is evidence that sodium plays some role as yet not understood in the production of essential hypertension. Grollman[6] has obtained improvement in five out of six hypertension patients on a rigidly reduced sodium intake diet, and Kempner[7] reports improvement in 62 per cent of hypertensives with his rice, fruit, sugar diet which is very low in sodium. Further investigation of this form of treatment of essential hypertension is needed.

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THE RECOGNITION OF SOME CARDIAC EMERGENCIES AND THEIR TREATMENT

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THE recognition of cardiac emergencies, their diagnosis and their management are important considerations in medical practice.

When one first sees a patient who is thought to have had a heart attack, one must determine with accuracy and rapidity whether it is cardiac or noncardiac, such as a benign fainting spell, acute pulmonary edema, acute alcoholism, et cetera.

Acute congestive heart failure is one of the most commonly seen conditions demanding emergency treatment.[12]

Left Ventricular Failure

Acute failure of the left ventricle is observed in patients with hypertensive arteriosclerotic heart disease, frequently following cardiac infarction, in the presence of aortic valvular lesions, notably syphilitic in origin.[5] It is also seen in cases of mitral stenosis and sinus rhythm, and may at times develop after exercise or excitement.

The usual symptoms are paroxysmal dyspnea, often occurring at night, usually without cyanosis but with marked pallor; crepitant râles, particularly at the bases of the lungs; profuse perspiration; marked accentuation of pulmonic second sound; and occasionally gallop rhythm. In severe cases frank pulmonary edema develops.

The differentiation between cardiac and bronchial asthma is of great importance in regard to treatment.[5] Morphine, which is used in cardiac asthma, is definitely contraindicated in bronchial asthma.

Once the diagnosis of left ventricular failure is established, one should administer morphine at once in doses from ¼ to ½ gr. Oxygen should be given as soon as possible. If acute pulmonary edema is present, it is well to do a venesection, removing 500 c.c. of blood. Compression of all four extremities with a tourniquet to withhold the venous blood from the right side of the heart is also valuable. Hoskin[8] states that he has used intravenous strophanthin, gr. 1/100, to steady the heart rate, with some success. Digitalis should be given to aid in the acute attack and to help prevent further attacks. The usual warning about digitalis must be given, however: it must be determined whether the patient has been taking digitalis and, if so, in what dosage. It is naturally imperative that the physician be familiar with the uses and abuses of digitalis and the newer digitalis preparations, if he is to treat cardiac patients intelligently. Mercurial diuretics may also be useful.

Right Ventricular Failure

Right ventricular failure is usually found associated with a long-standing circulatory embarrassment, and occurs as a result of some condition that puts an excess strain on the heart. The chief causes are mitral stenosis and chronic pulmonary diseases. At times, acute right ventricular failure may come on suddenly with the usual signs and symptoms of dyspnea, marked fatigue, nausea and vomiting, cyanosis, dilatation of the right border of the heart, venous engorgement, with corresponding increase in venous blood pressure, enlargement and tenderness of the liver, edema of the extremities, and ascites; hydrothorax may be present, as well as anasarca. The pulse is usually rapid and laboring.

Emergency treatment consists of giving morphine at once; and as in all cases where morphine is given, if the patient is sensitive to this drug, one should give pantopon, dilaudid, or demerol. Oxygen should be started as soon as convenient. Strict bed rest should be maintained. Salyrgan or one of the other mercurial diuretics should be given as soon as possible and followed by subsequent doses every second day until the edema is fairly well controlled. Ammonium chloride in doses of 1.5 gm. is of value if given in large enough doses of from 4 to 6 gm. daily. In some cases it is well to give 50 to 100 c.c. of 50 per cent dextrose solution by slow intravenous injection to replenish the lost glycogen of the cardiac muscle. One must also restrict fluid to 1,500 c.c. daily. As in left ventricular failure, the patient should be started on digitalis.

The differential diagnosis between left and right ventricular failure briefly is as follows:

From the Fergus Falls Clinic.

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Left Ventricular Failure.

1. Early congestion of the pulmonary tree.
2. Marked accentuation of pulmonic second sound.
3. Pallor, cough.
4. Fall in systolic blood pressure.
5. Usually absence of cyanosis.
6. Frequently follows:
   (a) Hypertensive arteriosclerotic heart disease.
   (b) Myocardial infarction.
   (c) Aortic valve lesions.
   (d) Syphilitic aortic regurgitation.

Right Ventricular Failure:

1. Congestion of pulmonary tree later.
2. Early ascites and peripheral edema.
3. Elevation of venous blood pressure.
4. Venous engorgement, especially noticeable around great veins of neck.
5. Enlargement and engorgement of the liver.
6. Cyanosis.
7. Frequently follows:
   (a) Mitral stenosis.
   (b) Chronic pulmonary disease.

Acute Coronary Occlusion

Coronary occlusion is probably diagnosed more often than it occurs. However, when it does occur, it is a definite cardiac emergency and demands heroic, prompt, and correct treatment.

We are all familiar with the symptoms of coronary occlusion. The pain is usually sternal or epigastric in location, may radiate down the arms and rarely to the back. White[17] states that, "There may be slight transmission of pain to the back and shoulders, but rarely is the pain prominent in the back, as it may be with a dissecting aneurysm." Other signs are lowering of the blood pressure, dyspnea, the characteristic gray pallor of the face, the patient showing signs of shock, as evidenced by sweating, coldness or clamminess of the skin, and rapid thready pulse. Leukocytosis, acceleration of the sedimentation rate, and friction rub are later signs.

On even a tentative diagnosis of coronary occlusion, the patient should be put to bed. A useful rule is: "If the patient presents the textbook picture, the diagnosis is easy. If in doubt, be cautious and prove the absence of occlusion before allowing the patient to be up and about."[11]

The pain may be relieved by morphine, pantopon or dilaudid. If morphine is given, it should be given in sufficient doses to relieve the pain, i.e., from gr. ¼ to ½, and may be given in dosages of ¼ gr. intravenously, repeated, in fifteen minutes if necessary. The intravenous method is preferable in a shocked patient because of the slow absorption by the subcutaneous route, and also because of the possibility of cumulative effects from several subcutaneous injections.[18] One must not, however, give opiates sufficiently to depress the respirations below 12 per minute.

Recently other drugs have been used with marked success for the relief of pain, such as demerol[7] and papaverine. In our experience, demerol has not proven as efficient as the opiates. Papaverine is a powerful local dilator of the vessels in spasm. Papaverine may be given either intramuscularly or intravenously in doses of 0.03 to 0.1 gm. If given intravenously, it may be diluted with 50 c.c. of glucose solution and given slowly; and one may give it every three to four hours, depending upon the character of the pain. Atropine in doses of gr. 1/50 to 1/75, given with the first dose of morphine, is helpful in relieving the cardiac irritability.

Herman states that in severe cases it might be necessary to anesthetize the patient by the intravenous injection of barbiturates such as sodium amytal, 0.06 gm. (1 grain) or in larger doses by mouth in very extreme cases.

Oxygen has been found very useful in the alleviation of the pain of coronary occlusion[2,7,12] and is best given through the BLB mask,[9] as the oxygen tent is at times difficult to operate and may make the patient more apprehensive. I do not like the nasal catheter method, as this is also irritating to the patient and causes an undue irritation of the mucous membranes of the nasopharynx. Alcohol is beneficial when the patient is in collapse with the blood pressure low.[9] It has a tendency to promote vasodilatation and to aid digestion. Caffeine sodium benzoate,[12,13,16] coramine, or metrazol intravenously is indicated if circulatory collapse is present.[13]

If dehydration is present, one should give 50 to 100 c.c. of 50 per cent glucose slowly intravenously,[11,12] to increase the blood sugar and also to build up the glycogen reserve.[6]

Dicumarol has been suggested by Wood[18] to prevent intraventricular clot with subsequent embolus formation. However, he further states that enough is not known about the drug to make it routine. Kossove[10] stated that it should be used routinely, and Sherman[16] pointed out that the infrequency of premonitory signs precludes the use of anticoagulants in the prophylaxis of coronary arterial thrombosis. When giving anticoagulant

drugs, a prothrombin time should be done at least every other day, and preferably every day, and the time should be kept below thirty seconds.

The diet should not exceed 1,200 calories and should be bland.

Enemas and cathartics are best not given for the first four days after an acute occlusion, and then it is advisable to administer a glycerine suppository or a small enema. At times, some of these patients have extreme difficulty in using a bed pan, and then it may be for the best advantage to the patient to use a commode[9] with the patient assisted by two nurses or attendants. For abdominal distention, I have found turpentine stupes very efficacious.

Geiger[7] recommends the use of theophylline diethylenediamine in doses of 0.1 to 0.3 gm. three times daily, or in doses of 0.5 gm. in 200 c.c. of physiological salt solution intravenously, given slowly over a one-hour period to relieve pain and improve circulation. Day[4] recommends the use of aminophyllin, 0.25 gm., early in the occlusion. I have used 0.5 gm. in 250 c.c. of 20 per cent glucose solution once to three times daily, given at the rate of 40 drops per minute intravenously, with the view of relieving pain, improving the circulation, building up the glycogen of the cardiac muscle, and somewhat preventing dehydration.

Quinidine is not part of the emergency treatment, but it is well to give it following the emergency period to prevent some of the arrythmias, such as ventricular tachycardia and auricular fibrillation, frequently seen in acute coronary occlusion.

Digitalis should be used in cases where congestive failure exists[14] together with the acute occlusion, but is contraindicated where congestive failure or auricular fibrillation does not exist.[3] It is a safe practice slowly to digitalize patients with acute coronary occlusion, with co-existing congestive heart failure or auricular fibrillation, and at the same time to give small doses of quinidine (3 grains twice to thrice daily). It has been proven in cases of auricular fibrillation complicating acute coronary occlusion, that digitalis should not be given alone but in conjunction with quinidine.[1]

One word of caution should be given about the overenthusiastic use of the cardiogram in acute coronary occlusion. It is my practice not to take an electrocardiogram for the first twenty-four to forty-eight hours, where the diagnosis is established without doubt, for, as Reinfenstein[15] has said, "A patient recovering from coronary thrombosis without an electrocardiogram is better than a dead one with an electrocardiogram."

The subsequent treatment of occlusion of the coronary arteries does not come under acute cardiac emergencies.

Pericardial Effusion

Fluid may accumulate in the pericardial sac either as an inflammatory exudate, as a complication of rheumatic fever, tuberculosis, septic infection of the pericardium (as in pneumonia), or malignancy of the pericardium, or as a transudate as seen in congestive heart failure, renal disease and other disorders showing generalized anasarca. If the fluid accumulates slowly, 500 to 1,000 c.c. may be formed without causing symptoms, but if it forms rapidly, much less fluid may seriously hamper cardiac function.

There are relatively few symptoms and signs in the early stages of pericardial effusion or hydropericardium. As fluid accumulates, however, the patient shows marked dyspnea, cyanosis, distension of the veins in the neck, liver engorgement with pain in the abdomen, fall of blood pressure, and increase in respiratory rate; and pulsus paradoxus might ensue.

When this occurs, it is essential that the patient is given relief, by giving opiates or other pain-alleviating drugs, and by doing a paracentesis, as Marvin states, for two reasons: "To remove fluid (1) because of its quantity or the rapidity of its formation is hampering the heart's action and interfering with the venous return to the auricles, and (2) for the purpose of diagnosis, especially when pus is thought to be present." In cases of rheumatic infection, one usually does not resort to paracentesis of the pericardial sac, because the effusion seldom becomes very large and a spontaneous regression usually occurs.

If the effusion present is purulent, one can insert penicillin solution into the pericardial sac.

Conclusion

There remains a great deal more to be said about cardiac emergencies, as, for example, the arrythmias, but time does not permit. There are but two factors that I should like to emphasize further.

1. Every physician who attempts to diagnose

(Continued on Page 312)

TREATMENT OF CONGESTIVE HEART FAILURE

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WE may divide the treatment of congestive heart failure into three parts without regard for the etiology: treatment of early left, acute left, and chronic right heart failure.

A patient with symptoms of early or mild left heart failure comes to his physician complaining of dyspnea on exertion, orthopnea, and attacks of nocturnal dyspnea. Although generalities in treatment of heart failure are always dangerous, each patient being very much of an individual problem, nevertheless the majority of these patients may be treated on an ambulatory basis without the strict bed rest formerly prescribed. In fact, many may continue at sedentary employment without loss of work if rest periods can be provided. In these cases, therapy consists of full digitalization followed by a maintenance dose sufficient to maintain full digitalization. This procedure is also required in the treatment of the other types of heart failure to be described later. In other words, heart failure is an indication for digitalization, irrespective of etiology and whether auricular fibrillation or regular sinus rhythm is present. Since the patient with early left heart failure does not have to be treated as a cardiac emergency, oral digitalization is the method of choice, and the whole leaf tablet of digitalis folia is still generally satisfactory. The total digitalizing dose may be easily calculated on the basis of one cat unit per ten pounds of body weight, one quarter of this dose being given every eight hours. Undue sensitivity will be noted by careful observation during this period; or if this is impossible, several days may be taken for digitalization, adding one cat unit extra for each day. Thereafter, one cat unit will serve as the average daily maintenance dose, although some patients require as little as one quarter of one cat unit daily and others as much as three. Because of variations in potency of different brands of digitalis folia, one should choose a single reliable brand and learn its potency by clinical trial.

The newer crystalline glucosides of *Digitalis purpurea* and *lanata* are being used more generally, their advantages being greater uniformity, more rapid absorption, and less toxicity. Many cardiologists still prefer the whole leaf tablets when rapid digitalization is not necessary, or for maintenance dosage. Several different brands of digitoxin are now available in 0.1 and 0.2 milligram tablets. The total digitalizing dose lies between 1.2 and 1.6 milligrams, and this may be given at once if rapid digitalization is desired. Maintenance dosage varies usually between 0.1 milligrams and 0.2 milligrams per day. Lanatoside C, a pure glycoside obtained from *Digitalis lanata,* is available under the trade name of Cedilanid, supplied in tablets for oral administration of 0.5 milligrams each and in 2 c.c. and 4 c.c. ampules of 0.4 milligrams and 0.8 milligrams for intravenous use. Ten to twelve tablets orally or 8 c.c. intravenously, are average total digitalizing doses; one or two tablets daily are the usual maintenance requirements.

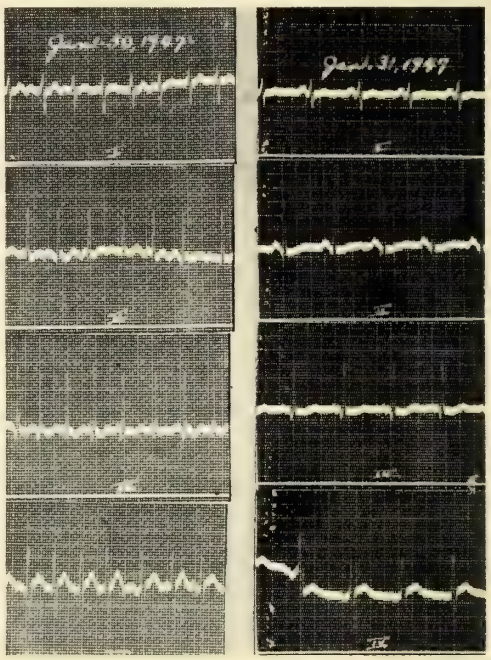


Fig. 1.—*Case 1.* Electrocardiograms on first and second day of hospitalization showing auricular fibrillation and right axis shift on January 30, and return to normal sinus rhythm on January 31. Some digitalis effect is evident.

It is well to re-evaluate the patient's degree of digitalization every six months by adding an extra tablet daily until symptoms of toxicity ap-

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pear, or by discontinuing the drug for two or three weeks and redigitalizing fully at the end of this period.

Strict limitation of fluids or salt will probably not be necessary in a case of early left heart failure, but the patient should be warned that excessive consumption of liquids of any kind may precipitate symptoms of failure.

Case Report

Case 1.—L. S., a forty-year-old insurance salesman whose mitral stenosis was discovered accidentally in 1941, had been well until the onset of mild exertional dyspnea in December, 1946. In the early morning of January 30, 1947, he presented the picture of acute left heart failure, with marked dyspnea, orthopnea, rapid and irregular ventricular rate of 180 to 210, and cyanosis of the lips and fingernails. He coughed continuously, raising blood-tinged frothy sputum and occasional clots of blood. Besides the congestive râles heard bilaterally, a pleural friction rub was heard in the left axilla. The rectal temperature was 101.5° F.

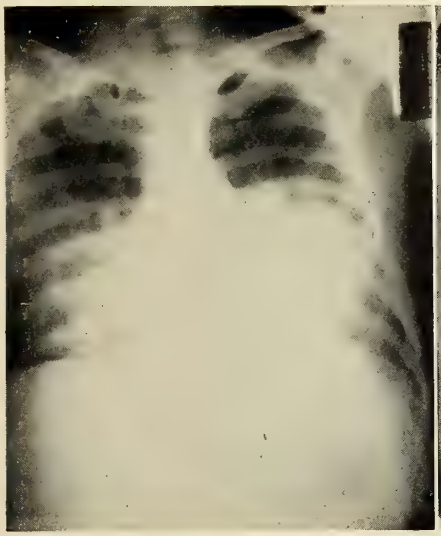


Fig. 2.—*Case 1.* Bedside chest film shortly after admission showing mitral configuration of the heart, pulmonary congestion, and consolidation in left lower lobe due to pulmonary infarction.



Fig. 3.—*Case 2.* Six-foot plate in January, 1945, showing marked cardiac enlargement and infiltration at right base probably due to fluid and old areas of pulmonary infarction.

Should nocturnal dyspnea persist after digitalization, diuretics, particularly the mercurial diuretics, may be given. A weekly injection of 1 or 2 c.c. of salyrgan, salyrgan-theophyllin, or mercupurin will often suffice. Some of these compounds are now available in tablet form for oral administration, and work quite efficiently with few toxic manifestations. Three to six tablets, daily, one or two days per week often work as efficiently as daily administration. The effect of mercurial diuretics may be enhanced by giving 4 grams of ammonium chloride or nitrate on the day before and the day after injection. Whether these salts increase the efficacy of the orally administered mercurial diuretics remains unproven.

Finally, suppositories of aminophyllin may be used at night to control nocturnal dyspnea.

Acute left heart failure may be a real medical emergency, taxing the skill of the physician and requiring prompt treatment. The following case exemplifies the problems involved:

Here, then, was acute left heart failure with rapid auricular fibrillation and pulmonary embolism. Morphine sulfate, gr. 1/6, was given intravenously and the patient was hospitalized and given 100 per cent oxygen by mask. Digitalization was accomplished by the administration of 8 c.c. of Cedilanid, given intravenously in about eight minutes. More morphine was given intravenously, the patient's condition appearing critical, with dyspnea approaching exhaustion. Five hundred c.c. of blood were withdrawn rapidly by venesection. Clinical improvement became definite. Air hunger and cyanosis had almost disappeared, and the ventricular rate was 90 to 95.

From the history it was assumed that auricular fibrillation was of recent onset and had probably initiated both the acute left heart failure and the pulmonary embolism. Quinidine sulfate was therefore given orally, a 3-grain sensitivity dose being followed in one hour by 6 more grains, and this amount was repeated every three hours. Normal sinus rhythm was established after 18 grains of quinidine had been given, and sixteeen

hours after admission the pulse rate was 80 and clinical improvement was striking. A maintenance dose of quinidine sulfate, gr. 3 four times daily, and Cedilanid, two tablets daily, was prescribed. Oxygen was discontinued after thirty-six hours, and convalescence was uneventful. He left the hospital on the fifteenth day (Figs. 1 and 2).

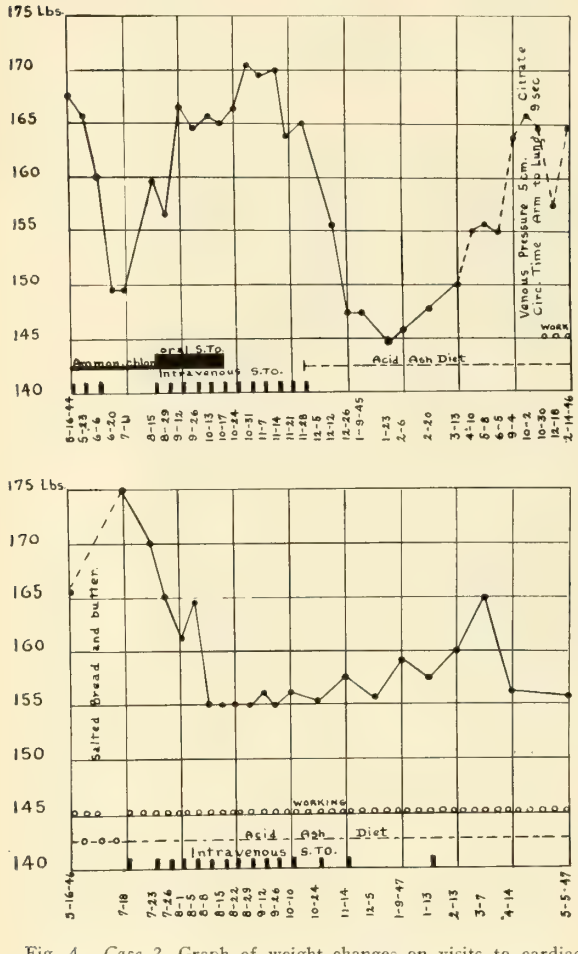


Fig. 4.—*Case 2.* Graph of weight changes on visits to cardiac clinic. Broken line represents weight while patient failed to obtain unsalted bread and butter. S.T.O. abbreviation for Salyrgan-Theophyllin.

In summary, acute left heart failure is a medical emergency often requiring a variety of therapeutic procedures, the most important being morphine, digitalis, oxygen, and in some cases venesection and diuretics.

Chronic right heart failure is a problem in edema control. If edema persists after digitalization and adequate rest, sodium intake should be sharply curtailed. F. R. Schemm believes that the diet should have an acid or a neutral ash, that dilute hydrochloric acid should be supplemented to insure proper acidity in order to liberate sodium in the intercellular spaces, and that a high fluid intake is important to promote diuresis and excretion of the liberated sodium. This method is quite satisfactory in patients with chronic dropsy provided the diet is strictly followed. In less severe cases, occasional use of the mercurial diuretics will suffice. The following case illustrates management of severe dropsy with both methods.

Case Report

Case 2.—F.B., a white man, sixty-two years old, first entered Ancker Hospital in 1944 with hypertensive heart disease, coronary sclerosis, auricular fibrillation, and right heart failure. Bilateral hydrothorax, ascites, and leg, ankle and sacral edema were present. Marked stasis dermatitis of the shins was striking in appearance, thick white scales overlying a mahogany-colored markedly edematous leg. Digitalization, prolonged bed rest, and large doses of both ammonium nitrate (grams 4 to 6 daily) and mercupurin (2 c.c. once or twice weekly) produced definite clinical improvement, but anasarca remained a problem.

Weekly or bi-weekly visits to the out-patient cardiac clinic for salyrgan-theophyllin intravenous injections followed hospitalization, the patient's weight and degree of edema showing the fluctuations one sees in these severe cases of dropsy with variations in their fluid intake and salt intake. His fluid intake at this time was supposed to be limited to between 800 and 1,000 c.c., but he frequently complained of thirst and undoubtedly greatly exceeded his quota on many occasions. (Schemm uses as one argument in favor of his high fluid intake for cardiac edema this common complaint of thirst in those treated with a low fluid intake). He had been warned to restrict his salt, and a "low salt cardiac diet" sheet was provided, but no issue had been made of the necessity of obtaining salt-free bread, butter, and salt-free vegetables.

On November 28, 1945, all diuretics were discontinued and the patient was given a strict full neutral ash diet after the manner of Schemm. A high fluid intake was obtained by the consumption of a glass of water hourly from 7 a.m. to 7 p.m., three drops of dilute hydrochloric acid being added to each glass. Digitalis was continued in a maintenance dose.

Figure 4 illustrates the patient's weight variations before and after the Schemm regime was initiated. The initial 20-pound weight loss was followed by an increase of 5 pounds as his appetite improved. Vigor and strength increased so that he was able to return to work, shoveling paper into a furnace in a paper box factory.

Between the middle of February and July, 1946, he was seen only once in clinic, and it was not until the latter month, with return of his edema and marked increase in his weight, that questioning revealed the cause. He had failed to obtain unsalted butter and bread. Resumption of the strict diet plus the help of a few injections of a mercurial diuretic (these were

(Continued on Page 298)

GENESIS OF RHEUMATIC FEVER

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THE definition of genesis according to Webster's New International Dictionary is "natural development into being." The purpose of this presentation, then, is to crystallize the available knowledge on the factors which precipitate acute rheumatic fever, and to discuss briefly the nature of the tissue reactions which take place in this disease.

Precipitating Factors

Role of Infection.—For many years, acute rheumatic fever has been considered by many competent authorities to be an infectious disease. In this country, the outstanding observations of Coburn[2] were among the first to center interest on the hemolytic streptococcus as one of the responsible agents, at least, for rheumatic fever. The concept that the hemolytic streptococcus is related in some undefined manner to rheumatic fever is now accepted by many investigators in this field. It is of interest that in 1927 Dr. Homer Swift of the Rockefeller Institute, who has devoted many years to the study of this disease, wrote in the first edition of Cecil's *Textbook of Medicine* as follows: "Rheumatic fever is a disease of undetermined etiology characterized by fever and a toxic state. . . ." Twenty years later, in 1947, Dr. Swift has included the section on "Rheumatic Fever" under streptococcic diseases in Cecil's seventh edition, and writes: "Rheumatic fever is a disease, infectious in nature, closely associated with invasion of the body by Group A hemolytic streptococci." Without detailing all the evidence in favor of the hypothesis that the hemolytic streptococcus is implicated in the genesis of rheumatic fever, the following may be stated.

1. Upper respiratory infections due to Group A hemolytic streptococci, such as nasopharyngitis, tonsillitis and scarlet fever, are frequently closely followed by rheumatic fever. In fact, epidemics of rheumatic fever have been associated with large numbers of cases of streptococcic respiratory disease.

2. Recurrent attacks of rheumatic fever are often preceded by streptococcic respiratory infections.

3. Patients with active rheumatic fever reflect certain immune responses characteristic of invasion of the tissues by hemolytic streptococci, such as an increased titer in the serum of antistreptolysin, antifibrinolysin and anti-M precipitins.

4. Although the sulfonamides do not alter the course of rheumatic fever, carefully controlled studies indicate that the prophylactic use of these compounds will prevent the invasion of tissues by hemolytic streptococci and thereby reduce the incidence of recurrent attacks of rheumatic fever.

The precise role of hemolytic streptococci in the genesis of rheumatic fever is not clearly understood, but the mechanism has been compared to the sequence of events which take place in human beings following the parenteral administration of horse serum. In other words, rheumatic fever is a manifestation of tissue hypersensitivity to the hemolytic streptococcus. Clinically, this relationship may be delineated by characterizing three phases of streptococcic diseases as follows:

Phase I	Phase II	Phase III
Suppurative and Toxic Phase Nasopharyngitis, tonsillitis, scarlet fever, puerperal sepsis, et cetera	*Latent Phase*	*Nonsuppurative Phase* Acute rheumatic fever

Phase I represents the initial invasion of the tissues by Group A hemolytic streptococci. This phase is characterized by suppuration, but the disease may be so mild that it may be completely overlooked. Although suppurative complications are largely prevented with available chemotherapeutic agents, the early use of the sulfonamides or antibiotics, even in the mildest cases, will not prevent the subsequent development of rheumatic fever. Successful chemoprophylaxis in rheumatic fever means the prevention of the invasion of tissues by hemolytic streptococci. Present-day chemotherapy limits the more severe manifestations of Phase I to a few days. The generally accepted opinion is that Phase II is a latent or asymptomatic period lasting from two to six weeks before the onset of Phase III or acute rheumatic fever. However, recent evidence would indicate that the

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period immediately following Phase I may be marked by extensive tissue reactions which are reflected in failure of the patient to regain his normal sense of well-being, low-grade fever, tachycardia, leukocytosis, accelerated erythrocyte sedimentation rate, and abnormal electrocardiographic findings.[7] These features indicate the presence of rheumatic fever, and may be so insidious that an undetected valvulitis may ensue. This may explain in part why it is so difficult to elicit a history of a frank attack of rheumatic fever in individuals with inactive rheumatic valvulitis. Nevertheless, Phase III, which is considered to be the stage of late nonsuppurative manifestations of hemolytic streptococcic infections, particularly upper respiratory diseases, is frequently ushered in with the explosive onset of migratory polyarthritis, fever, tachycardia, myocarditis, pericarditis, and valvulitis. Several possibilities exist as to the ultimate outcome of the patient having an initial attack of rheumatic fever. According to Keefer,[4] 2 to 5 per cent of all patients with acute rheumatic fever die within the first year, while the incidence is between 15 to 20 per cent in those individuals with evidence of acute carditis. On the other hand, it is estimated that, following an initial attack, between 15 and 30 per cent of the patients will recover completely without any residual cardiac damage. Unfortunately, in patients who recover completely or in those who recover with a residual valvular damage, there lurks the constant threat of recurrent attacks, particularly in children under fifteen years of age. And finally, bacterial endocarditis may be superimposed upon a healed but scarred rheumatic valve.

In summary, then, the writer is of the opinion that Group A hemolytic streptococci are related in some way to the onset of acute rheumatic fever. At the present time, the most logical concept of this relationship appears to be a state of hypersensitivity of the tissues to the streptococcus. The possibility that other microbes may initiate the disease is not denied. In fact, following cardiac damage by an initial attack of rheumatic fever, there may be several "trigger agents" which may be responsible for recurrent attacks of the disease. These may include microbes other than the hemolytic streptococcus.

Host Factors.—Although there is accumulating evidence that rheumatic fever is an infectious disease, there are other factors which enter into the genesis of the disease. One of these additional factors is the susceptibility of the host. Rheumatic fever has its greatest attack rate in children between the ages of three and fourteen years, with the highest frequency for initial attacks at about six or seven years. It is unusual for rheumatic fever to occur in infants. On the other hand, the disease is not at all uncommon in adults. The writer has observed an initial and fatal attack of rheumaic fever in a man over seventy years of age.

Another interesting feature about rheumatic fever is the existence of a hereditary predisposition for rheumatic fever. Several familial studies have indicated such a relationship.[6]

Environmental Factors.—Rheumatic fever has long been considered a disease of the temperate regions, occurring most frequently in cold and wet climates. However, it should be pointed out that the disease is quite prevalent in areas having a mild and dry climate such as Colorado and Utah. A considerable number of cases occurred in the military personnel during the past war in these areas, and the occurrence of the disease was associated with epidemics of upper respiratory disease due to the hemolytic streptococcus. Rheumatic fever is more prevalent in urban areas than in rural areas, which may be related to crowding and more intimate exposure to streptococcic disease. It is frequently stated that economic factors also enter into the genesis of the disease, the attack rate being greater in the poorer classes than in the rich. Malnutrition has also been considered a factor. Here, again, it is essential to bear in mind that poverty and malnutrition are associated with crowding, and that the element of exposure may be of more fundamental significance.

Tissue Reactions

The nature of rheumatic fever may be defined further by briefly outlining the tissue reactions that occur. Basically, rheumatic fever is a disease of mesenchymal tissues, namely, connective tissue and blood vessels. The initial lesion involves the collagen, causing focal areas of swelling, separation of the fibers by edema, swelling of the fibers, and then degeneration of the fibers. Associated with this tissue reaction, and much more prominent clinically, are exudative phenomena involving the joints, pleurae and pericardi-

um. Following these early tissue changes, there is the appearance of a characteristic type of proliferative reaction. This latter reaction is best exemplified by the rheumatic granuloma or Aschoff nodule, and is most conspicuous in the myocardium. Similar but less well defined proliferative lesions are found in the subcutaneous tissue, larger blood vessels, endocardium and heart valves. Clawson[1] has maintained that the Aschoff nodule is not specific for rheumatic fever. The ultimate outcome of this proliferative type of lesion, according to Swift,[11] is the replacement of granuloma cells by fibroblasts, resulting in formation of scar tissue, and the appearance of more collagen than existed originally. He also makes the significant statement that whereas salicylates cause a reduction in the inflammatory or exudative reaction, these drugs do not alter the course of the proliferative type of reaction. Thus, with the administration of salicylates, joint pain and the accompanying effusions abate, but subcutaneous nodules continue to make their appearance.

One of the difficulties that has persistently blocked a better understanding of the genesis of the lesions in rheumatic fever has been the failure to reproduce the disease experimentally in animals. Recently, Rich and Gregory[8,9] reawakened interest in this subject when they produced an anaphylactic type of tissue response in rabbits with horse serum. Histological studies of the myocardium revealed lesions closely resembling those of rheumatic carditis. In summarizing his experimental data, Rich[10] concluded that rheumatic fever represents focal hypersensitive reactions of the anaphylactic type to an antigen or antigens to which the body has been sensitized. While present evidence implicates the hemolytic streptococcus as the most common sensitizing antigen, it is not unlikely that antigens other than the hemolytic streptococcus may be responsible for some cases of rheumatic fever. The observations of Rich and Gregory have been confirmed by Fox and Jones,[3] and Kyser, McCarter and Stengle[5] have also produced a similar type of myocarditis in rabbits with horse serum and have made the additional significant observation that antihistamine drugs such as benadryl will impede the development of the lesions. It is becoming more and more clear that further studies on experimental rheumatic fever should include the utilization of several species of animals as well as different types of antigens.

Summary and Conclusions

This brief review indicates that there are many complicating factors that enter into the elucidation of the problem of the genesis of rheumatic fever. Although there is more than suggestive evidence that the hemolytic streptococcus is responsible for some cases of rheumatic fever, the precise mechanism whereby this species of bacteria provokes the disease is not clearly understood. The most logical working hypothesis at the present time is that in some cases, at least, there exists a hypersensitivity of the tissues to the hemolytic streptococcus. In addition, there are certain ill-defined host factors such as an inherited susceptibility of the tissues to this type of sensitivity. Further investigations are highly desirable on the relationship of the susceptible host to environmental factors such as exposure to infection and the response of the tissues.

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INCIDENCE OF PULMONARY EMBOLISM AFTER VENOUS SCLEROSING THERAPY

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PULMONARY embolism through the ages has been one of the most feared catastrophes in the treatment of patients whether medical or surgical. Robertson, former head of the Section on Pathologic Anatomy of the Mayo Clinic, aptly stated in regard to postoperative embolism: "Suddenly, almost always, out of a clear sky there is strange restlessness, rapidly ensuing shock with substernal distress, air hunger, collapse and death in a few minutes. The horror of the patient's relatives is echoed by the poignant distress and shock of the attending surgeon, colleagues and nurses" and may we add, to the friends in the community in which the patient resided.

In a statistical review of the records of postmortem examinations at the Mayo Clinic over a ten-year period, 1917-1926, Henderson found 313 cases of pulmonary embolism, 267 being surgical cases and forty-six nonsurgical. In 223 (83.5 per cent) of the cases the emboli were the primary cause of death. The average age of the patients was 53.2 years. Nineteen of the forty-six nonsurgical cases were cases of cardiovascular disease. The source of emboli was most commonly in the iliac, femoral or pelvic veins, prostatic plexus or vena cava in the order named. We believe that the incidence of fatal pulmonary embolism has decreased in recent years. Other studies have revealed this decrease. Some of the reasons for this decrease are as follows:

Anticoagulants have been introduced to forestall an acute or remote possibility of pulmonary embolism. Their proper use is well described by Allen, Barker and Hines. The value of anticoagulant therapy is clearly indicated by the report of Barker and his associates on 1,000 specially selected surgical patients who were given dicumarol in the immediate postoperative period. In the entire series only one death occurred from pulmonary embolism. This extremely low incidence of fatal pulmonary embolism is remarkable because 379 patients had demonstrated a thromobotic tendency at some time before operation and 438 had been subjected to abdominal hysterectomy. The statistical risk of thrombosis and embolism in abdominal hysterectomy is known to be high. One of us (F.L.S.), in an unpublished study on postoperative complication made in 1919, also observed this high incidence following abdominal hysterectomy.

The surgical interruption of the femoral vein was recommended for pulmonary embolism by Homans in 1934 and from 1941 on, in the medical service of the Massachusetts General Hospital, ligation became the treatment of choice but it usually was performed only on the affected side.[5] In 1943, bilateral interruption regardless of noninvolvement of the other extremity became the routine treatment of pulmonary embolism on that service. By the last procedure Carlotti and his associates at the Massachusetts General Hospital reduced the mortality rate from pulmonary emboli in the medical cases in the years 1941 to 1945 to 28.3 per cent as compared to 50.7 per cent in medical cases in which this procedure was not carried out after a nonfatal episode of pulmonary embolism.

In cases in which sclerosing treatment of varicose veins is planned at the Mayo Clinic, special care is taken in examining the extremities for evidence of vascular disease and in eliciting a history of any previous episodes which could be interpreted as being due to vascular disease of the lower extremities. Often localized atrophy, with brawny induration and discoloration, or slight edema of the leg suggesting some previous episode of thrombophlebitis is found. At the time this episode occurred, it often was not considered of any special significance by the patient or physician, if consulted, but was passed off as extraneous. Sometimes a patient who has had previous sclerosing treatment of a vein may volunteer the information or respond to a question to the effect that a few days following this treatment he had awakened at night "with a touch of pleurisy," had had difficulty in breathing or

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possibly had had rusty expectoration for which he took some aspirin, applied a mustard poultice to the affected side or remained in bed for a few days. In all probability an embolic episode was the source of the trouble. Doubtless many more respiratory episodes of this type occur after sclerosing treatment than are reported. This failure is due to lack of understanding of the true condition. The embolic accident when it does occur may be due directly to sclerosing treatment, or possibly its occurrence is a coincidence and previous episodes have followed an ancient thrombophlebitis.

Special care is taken in cases in which previous episodes or some indication of vascular disease is obtained. In our experience in sclerosing treatment of varicose veins at the Mayo Clinic we have found that the massive type of embolus is seldom encountered in such cases but rather small emboli occur which involve the lungs in varying degrees. A shotty appearance in the base of one or both lungs may be evident in the roentgenogram.

From 1927 through June 30, 1947, 11,700 patients have been treated for varicose veins at the Mayo Clinic and only seventeen of these patients (0.14 per cent) have had pulmonary emboli. Sixteen had nonfatal emboli and recovered without subsequent sequelae, and one had a fatal embolus. Prior to March, 1937, treatment in our series consisted mainly of injections. After 1937 the combined ligation and injection technique was used. This technique consists of injection of a sclerosing solution into the distal segment at the time of ligation of the great or small saphenous vein. Our yearly reports reveal that from 80 to 88 per cent of all patients were treated by the above procedure and the remainder received injections only. In 93 per cent of the cases in which operation was performed, the great saphenous vein and its tributaries were ligated and in 7 per cent the small saphenous vein was ligated in the popliteal space.

We have attempted to determine whether the seventeen patients who had pulmonary emboli had any characteristics which distinguished them from the patients whose course was uncomplicated. All seventeen were referred for venous therapy after complete examination. There were nine men and eight women. Their average age was fifty years. Three had mild hypertensive diseases, one had duodenal ulcer, one localized lupus erythematosus and one slight pneumoconiosis. One gave a history of deep thrombosis of the femoral vein ten years previous to coming to the clinic but complete involution had occurred before examination in the section on venous therapy. Varicose veins had been present for an average of twenty-seven years in the seventeen cases and the average length of time during which discomfort had been manifest was six years. Four patients had varices on one lower extremity only and thirteen had them on both lower extremities. Six had varicose ulcers. In six cases the embolic episode developed prior to 1937, whereas after 1937 when ligations were instituted, eleven occurred. In these eleven cases combined ligation and injection was employed.

The sclerosing solution used for the most part in our entire series was a 5 per cent solution of sodium morrhuate although a 10 per cent solution was used when a more concentrated solution was required. Quinine and urethane (Génévrier's solution), a solution of 50 per cent glucose and 25 per cent salt, 30 and 40 per cent solutions of sodium salicylates and 20 per cent solution of salt were all used early in the work but sodium morrhuate proved to be the solution of choice.

Always to identify patients during the treatment period who are likely to develop an embolic condition is practically impossible as all exhibit swelling and tenderness with local increase of heat resulting from the chemical endophlebitis. Occasionally chills and fever with moderate to high leukocyte count will be observed; this episode lasts for twenty-four hours or so and then the leukocytosis recedes. The local tenderness and swelling may last for some days. Their duration depends on the size of the vein treated. Our earliest embolic episode was four days and our latest sixteen days after beginning of treatment. In fifteen cases roentgenograms showed sufficient evidence to warrant a diagnosis of embolism with ensuing infarction.

Just what initiates the development of a thrombus is a matter of conjecture and in the literature reviewed various explanations were advanced.[2] Investigators are generally agreed that the basic principle on which they have been working is the prevention of formation of thrombi in the deep veins of the lower extremities. Enough information has been gathered to attribute the formation of a thrombus in many cases to operative

procedures. Allen and Linton reported that debilitated persons with restricted mobility of the lower extremities are likely to have thrombosis. Yet Munro in discussion of Albright's paper, stated that in the army general hospitals in England pulmonary embolism rarely occurred in 250 cases in one series and in 500 in another in which patients paralyzed because of injury to the spinal cord were confined to bed and their legs were immobile for months. Thrombosis is prone to develop in association with trauma and infections. All investigators have observed the increased incidence of thrombosis in patients more than forty years of age.

It is difficult to determine why an embolus develops during active sclerosing treatment. Chemical endophlebitis should anchor the thrombus at the site of the injection. Tributary communicating veins may be a factor for phlebothrombosis may develop in them although the walls of the veins may not be affected, and some muscle contraction may express the soft jelly-like clot into the deep circulation. Necropsy has revealed that clots had formed during life and propagated rapidly toward and into the large veins with no evidence of injury to the vein walls but simply with stasis or stagnation of circulating blood.

Inasmuch as thrombophlebitis of the lower extremities is the main factor in surgical procedures regardless of the site of the operation, patients who have undergone injection treatment and operation, especially those confined to bed, should have leg and foot exercises at frequent intervals and, when physical condition permits, actual walking is beneficial.

Before the days of anticoagulants at the clinic we hospitalized at once patients who had pulmonary emboli after sclerosing treatment, placed them in the Fowler position and immobilized the chest as much as possible with binders and by the hypodermic use of morphine sulfate every four hours until the respiratory rhythm was reduced to 10 or 12 per minute. Enough sedation was given to keep the patient in a semicomatose state in an oxygen tent containing a mixture of 50 per cent oxygen. The oxygen compensated for the low volume intake and also more or less prevented pulmonary abscess or bronchiectasis if these did not previously exist. We found that if the patients with a severe involvement did not die in twenty-four hours, they recovered.

It is now our practice to hospitalize any patient who is suspected of threatening venous clotting, as a prophylactic measure and to begin anticoagulant therapy immediately. If the consultants on the vascular service advise operation because of likelihood of a thrombotic migration from thrombophlebitic involvement in the extremity, the region of the deep veins of the extremity is explored and ligation is performed.

Summary

In the period 1927 through June 30, 1947, 11,700 patients were given sclerosing treatment for varicose veins at the Mayo Clinic. In seventeen of these pulmonary embolism developed, an incidence of about 1.4 per thousand. There was only one death in the series from pulmonary embolism. In our experience anticoagulant therapy has proved adequate when venous clotting appears likely or nonfatal pulmonary embolism occurs and occasionally operation is resorted to in addition. A thorough preliminary history and examination are essential in cases in which sclerosing treatment is planned.

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Case Reports

EPISTAXIS

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EPISTAXIS is hemorrhage from the nasal cavity. It may vary in quantity from a mere trickle or trace to a free flow of blood so severe that syncope will follow and serious anemia be produced. Death may occur from prolonged and repeated nasal hemorrhages.

While epistaxis is not near and dear to the hearts of most otolaryngologists, all of us are faced sooner or later with the problem of nasal hemorrhage, whether it be mild and prolonged or severe and profuse.

I wish to present case which apparently had a perfectly innocent onset and developed into something quite the opposite as far as etiology and end results were concerned.

Case Report

A patient, Mrs. L. D., aged fifty-eight, was seen on the evening of December 26, 1946, at St. Mary's Hospital, at the request of her family doctor. She had been bleeding from her left nostril for twenty-six hours.

The examination on admission was confined to the head, and particularly to the nasal cavities, because of the critical condition of the patient. The only positive finding was a simple erosion about 6 mm. in diameter, round, and not penetrating as deep as the cartilage in Kiesselbach's area on the left.

The nasal mucosa was shrunk with 0.5 per cent neosynephrine and anesthetized with 1 per cent pontocaine spray; cotton was placed in the posterior choanae, and all clots were removed with a nasal suction tip. Then the area was cauterized with a silver nitrate stick. The lesion still oozed.

Next, the mucosa of the area was elevated by injecting 1 per cent procaine containing 3 minims of adrenalin to the ounce. After ten minutes the area bled again.

Finally, I used trichloracetic acid, neutralized it with bicarbonate of soda, and applied Gelfoam with sterile trombin, and the bleeding ceased.

Six hours later she oozed again, and 10 c.c.'s of the patient's own blood plus 1 ampule of Hykinone were injected intramuscularly. She did not bleed until the next day.

The following day the relatives were interviewed, and it was revealed that on January 26, 1946, she had had a left mastectomy. The pathological diagnosis of the removed breast showed carcinoma simplex with seven lymph nodes involved.

On the same day as the interview with the relatives and the general examination of the patient, she bled again from the right side of her nose and from an area similar to the one previously described on the left side.

This time electrocautery was used at once, and I had visions of perforation of the septum, since the two cauterized areas were directly opposite each other. Simultaneously, she was again given Hykinone, one ampule. This was followed immediately by two blood transfusions. Her blood counts next day were as follows: red blood cells 2,710,000, white blood cells 4,300, with a differential count showing polymorphonuclears 65 per cent, lymphocytes 25 per cent, monocytes 3 per cent, and new "stab" forms 7 per cent.

X-rays of the lumbar spine and the pelvis on December 27 showed no metastatic malignancy. An x-ray of the sinuses showed no bony destruction. The blood cultures were negative. The chest plate was normal, except for left ventricular hypertrophy. The patient had a few bouts of slight oozing which gradually ceased. Nasopharyngoscopic examination failed to show any abnormality in the epipharyngeal vault, but there was considerable vascular congestion of the area.

She was given five deep x-ray treatments to her nose between January 13 and 18.

It was during this time that a small firm mass, about 1 cm., in diameter, was noticed above her left eye. It was almost rock-like in consistency. Small petechiae appeared in her soft palate, and a few hemorrhages were present in the fundus of the left eye. At the same time she showed some hemorrhage behind her left ear drum, accompanied by a mild conduction deafness with the Weber to the left.

Her blood picture on January 20, following her third transfusion, was alarming: red blood cells 880,000, white blood cells 9,100, hemoglobin 21 per cent, platelets 120,000, bleeding time 23 minutes and 30 seconds (checked), and clotting time 3 minutes and 30 seconds.

She was put on (1) cevitamic acid, 100 mg., t.i.d., (2) Cenolate, 200 mg., intramuscularly, q.d., (3) Demerol, 100 mg., q.d., and Lederle's liver, 45 units, q.d.

On February 1, 1947, a sternal biopsy was done. This was negative. This was repeated on May 2, 1947, and was again negative, the reason for which will be indicated shortly. Meanwhile, her blood counts had risen. By May 26, 1947, her red blood count was 1,820,000 and the white blood count was 8,300. Her bleeding time, shortly after her transfusion plus the Hykinone, had been reduced from 23 minutes and 30 seconds to 6 minutes and 40 seconds. However, her platelets which were 120,000 on January 20, had gradually fallen off until by February they were hovering around 73,500. In the meantime, the various petechiae that she had disappeared, her left ear returned to normal, her hearing returned, but she continued to show some hemorrhage in both eyegrounds.

Since we felt that this case was obviously one of a malignancy, most likely metastatic, the patient was cared for symptomatically in the hope that lethal exodus would not be too far off.

Her left eye was now completely closed by this tumor mass which had extended completely round it in the periorbital tissue. Furthermore, she now presented similar areas of tumor masses in the right orbit. The patient remained rational and there remained but one thing to do: biopsy the mass in the orbit. The question arose immediately as to whether to biopsy the mass in the left orbit, i.e., the original area, or to biopsy the little masses in the right orbit. We feared that a biopsy at this time might cause severe hemorrhage, or the wound might not heal and the cosmetic results in the end would

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perhaps reflect upon the advisability for such a procedure, particularly from the relatives' point of view. However, a biopsy was obtained from the orbital tissue on the left on June 16. The biopsy showed: "Carcinoma simplex with occasional tendency to adenomatous arrangement of the cells . . . mitoses are commonly present." The pathological diagnosis was metastatic carcinoma.

Since the cells found on biopsy of the orbital tissue were similar in appearance and structure to those cells found in the microscopic examination of the tissue from the left mastectomy a year ago, at which time the diagnosis of carcinoma simplex was made, both orbital masses would seem to be metastatic from carcinoma of the left breast a year ago.

The patient expired the morning of June 22, 1947, having lapsed into coma twenty-four hours previously.

Postmortem examination revealed carcinomatosis of the liver, spleen, pleura, pericardium, and skin. The medullary portion of the ribs was replaced by hard yellow tissue. Section through the lumbar vertebrae showed the bodies of the vertebrae to be replaced by similar yellowish gray firm tissue. Section through the sternum showed the same type of tissue. This tissue (carcinoma) was so firm in the sternum that two previous biopsies of the sternum had failed, as has been noted previously.

MALIGNANCY OF THE GALL BLADDER ASSOCIATED WITH CHRONIC CHOLELITHIASIS

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THE purpose in presenting this case report is to focus attention on the subject of carcinoma of the gall bladder, and to briefly consider the incidence, symptomatology, treatment, and prognosis of this condition.

Case Report

The patient, a sixty-five-year-old white woman, first presented herself for treatment on June 20, 1947.

Present Complaint.—Her chief complaint was of upper right quadrant pain which had been present for about two months. The pain was almost constant and quite severe at times and was associated with anorexia, sleeplessness, and weight loss of about 12 pounds.

Past History.—Thirty years earlier she had had an hysterectomy, together with removal of ovarian tumors. No record of this procedure was available. She had had a tonsillectomy twelve years previously. She denied any other serious illnesses, operations or injuries.

History By Systems.—She had had several attacks of pleurisy—the last several years earlier. She had been troubled with cystitis occasionally but this condition was under control at the time. On close questioning, she admitted to having been troubled with "dyspepsia," associated with bloating and upper abdominal pain at times, for the past twenty years. This was never so severe as to require medical attention. She denied ever having been jaundiced. She had been constipated occasionally and took cathartics at times.

Physical Examination.—The patient was a well-developed, well-nourished white woman in no acute distress. The only positive finding of note was tenderness on deep palpation in the right upper quadrant. No mass could be felt, and the liver was not enlarged. There was no jaundice. The spleen was not palpable. The heart and lungs were normal. The blood pressure was 140/80. Pelvic and rectal examinations were negative. The urinalysis was normal. Hemoglobin was 12.5 grams.

X-Ray Findings.—A flat plate of the abdomen failed to reveal any urinary or biliary calculae. Administration of dye showed the presence of a nonfunctioning gall bladder.

Operation.—An exploratory laparotomy was performed on June 26 under sodium pentothal, ethylene, and curare. A high right rectus incision was made. The gall bladder was found to be slightly enlarged, thick-walled, with a contraction and new growth formation in the region of the neck. There was extension of the growth to the under surface of the liver. There were several nodules (metastatic) on the upper surface of the liver, one of which measured approximately 2 cm. in diameter.

The gall bladder was opened and found to contain about forty smooth faceted stones all about the same size, 5 cm. in diameter.

It was useless to attempt to remove the gall bladder as it would have involved resection of a portion of the liver to extirpate the new growth. This would have accomplished nothing in view of the presence of metastases. A simple drainage of the gall bladder was done, suturing into place a large rubber tube. A biopsy of the gall bladder wall was taken and one of the nodes from the liver was removed for study. The wound was then closed. The tissue removed showed adenocarcinoma.

Postoperative Course.—The patient left the hospital on the fourteenth day after an uneventful convalescence. There was considerable bile drainage from the tube at first but this had diminished markedly by the time of her discharge.

The patient's condition at present is precarious. She looks cachectic, she is losing weight, her hemoglobin is falling rapidly, she has no appetite and complains of extreme weakness and pain. She will shortly succumb to her carcinoma.

Discussion

The history of this case is almost typical for this condition. It will be noted that there is nothing that would lead one to arrive at a diagnosis of carcinoma. The history, symptoms, and findings are those of a benign biliary disease. There are no further x-ray or laboratory tests that could have shed any light. The most unfortunate aspect is that, although the diagnosis was established at operation, it was already too late to accomplish anything by surgical means.

There has been considerable material in the medical literature on the subject of carcinoma of the gall bladder. I wish to summarize briefly the more recent reports.

Incidence.—Carcinoma of the gall bladder may be said to comprise 5 per cent of all carcinoma deaths. It is in fifth place in frequency of incidence of carci-

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noma of the organs of digestion (1. stomach; 2. colon and cecum; 3. rectum; 4. esophagus; 5. gall bladder and ducts). It accounts for 0.33 per cent of all deaths as determined by autopsy. In a combined study of 35,054 operations on the gall bladder, there were 393 carcinomas—an incidence of 1.12 per cent.

Sex.—About 80 per cent of carcinomas of the gall bladder occur in women, and it constitutes between 8 and 10 per cent of all carcinomas found in women. This greater incidence in females is considered to result from the preponderance of gallstones in women.

Age.—With rare exceptions, the patients with malignancy of the gall bladder are in the carcinoma age group. The average age is sixty years.

Causative Role of Cholelithiasis.—The great majority of cases of carcinoma of the gall bladder show the presence of stones prior to the development of the neoplasm. Most authors indicate that stones are present in about 80 per cent of cases. Several have reported cases of carcinoma developing in patients who have had stones removed but cholecystectomy was not performed. One may conclude that 4 to 5 per cent of patients having gallstones will develop cancer.

There is experimental evidence to show that neoplasms may be produced in gall bladders of laboratory animals by the introduction of foreign bodies.

Symptomatology.—The most constant symptom of carcinoma of the gall bladder is pain—usually localized in the right upper quadrant. The duration may be from a few weeks to a few months. It is dull and constant and may exist with or without colic. There is usually weight loss which depends largely on the severity of the gastrointestinal disturbance. Anorexia is almost always present. Vomiting is common, especially if there is obstruction in the duodenum. Jaundice, usually continuous, is present in about 50 per cent of cases. A mass is present in about 50 per cent of cases, as is a palpable liver edge. Nodules may be felt if there are metastases present. Anemia is not marked although it is usually present.

Differential Diagnosis.—Among the conditions to be differentiated are the following: carcinoma of the stomach, malignancy of the liver, carcinoma of the hepatic flexure of the colon, and syphilis of the liver.

Treatment.—Carcinoma of the gall bladder is usually inoperable by the time the diagnosis is made. Various authors have suggested radical procedures, depending on the location and extent of the growth. Palliative measures, especially an attempt to restore the flow of bile, should be undertaken when indicated. In most cases the removal of tissue for diagnosis has been the only procedure attempted.

Prognosis.—This can be summed up in one word—"gloomy." The majority of patients die within one year. Extension is by local infiltration of the gall bladder wall, then to the liver and ducts. Distant metastases may occur but are not common. The liver is usually involved at the time of operation. The majority of cases are of the adenocarcinoma type.

Summary

1. A typical case of carcinoma of the gall bladder is presented.

2. A brief review of the literature leads to the following conclusions:

(a) Carcinoma of the gall bladder is more common than is generally supposed.

(b) The clinical picture of carcinoma of the gall bladder is similar to that of benign biliary disease.

(c) Gallstones are probably an etiological factor in the production of malignancy of the gall bladder. For this reason, with present-day surgical methods, prophylactic removal of symptomless calculous gall bladders is justified.

(d) The diagnosis of carcinoma of the gall bladder must be made by operation, but the surgical treatment of the condition is of little value, and the prognosis is poor.

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VAGOTOMY IN THE TREATMENT OF IDIOPATHIC ULCERATIVE COLITIS

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from February issue)

Charles H. Wagner (the name sometimes appears as Wagoner) was born at Wyocena, Columbia County, Wisconsin, on February 12, 1853. In 1860 the Wagner family removed to St. Charles, Winona County, Minnesota, where the father continued his occupations of farmer and dealer in boots and shoes. Before 1870 the family was established in Eyota, Olmsted County.

Charles Wagner received his early education in the common schools and the high school of St. Charles and in 1870 took an academic and premedical course at the University of Minnesota which he followed, in the winter of 1871-1872, with a course of study at the Homeopathic Hospital College at Cleveland, Ohio. In the spring of 1872 Dr. C. H. Wag(o)ner opened offices at the Anker Hotel in Spring Valley and there engaged in the practice of medicine until, in October, he returned to the Homeopathic Hospital College to complete his medical training; on February 12, 1873, he was graduated in medicine and surgery with an additional degree of M.F.H. for literary merit.

Returning to Spring Valley as physician and surgeon Dr. Wagner began in earnest his life in that community. On June 4, 1874, he was married to Luella F. Brown. A historical note of 1882 stated that of the four children of the marriage three were then living; that Dr. Wagner had been county physician three years and was serving as chairman of the village board of health; that he was progressive and was liberal in his professional views, not confining himself to any one school of medicine. Under the act of 1883, to regulate medical practice in the state, he received certificate No. 410 (H) on November 26, 1883.

Although Dr. Wagner is believed, with reason, to have practiced in Spring Valley into 1887, a confusing note appears that in 1881-1882 Dr. C. H. Wagner was in the little village of Money Creek, Houston County. According to another note a Dr. Wagner was in Hartland, Mower County, in the late eighties. Whatever his other moves may have been, Dr. Charles H. Wagner, long of Spring Valley, left that village at the end of the decade and before 1890 was established in Faribault, Rice County. After a few years in Faribault he turned over his practice to Dr. Charles M. Robilliard and moved to Minneapolis.

When Dr. Wagner died in Minneapolis on March 1, 1920, at the age of sixty-seven years, the *Journal-Lancet* stated that he long had been retired from medical practice.

S. W. Wallace, physician, possibly an itinerant practitioner, was in Preston, residing at the Stanwix Hotel, in 1862. His professional card ran in the *Preston Republican* from April 19 to November 7, inclusive, of that year. His name has not been found in medical directories or registers.

James Madison Wheat, one of the ten children of Silas Wheat and Eunice Dewey Wheat, was born on April 5, 1825, at Franklin, Delaware County, New York. The other children of the family (in 1943 all long since dead), were Sibyl Ann, Cordelia Eliza, George Washington, Sylvanus Addison, William Dwight, Mary Amanda, Maria Louise, Clarinda Rebecca and Lemira Frances. The father, Silas Wheat, a farmer and a native of New York State, lived to be ninety-six years old, failing by some years, however, to reach the age of his father, a sea captain who was 102 when he died. The mother, Eunice Dewey, related distantly to Admiral George Dewey, was born in Westfield, Massachusetts.

James Madison Wheat was a pupil in the district schools of Delaware County near Franklin and at the Delaware Literary Institute, the equivalent of a good high school, in Franklin. After his graduation from the Institute he went to Kentucky and there, a mere boy, taught school for eight months. On returning home he assisted in the office of Dr. Albert Sullard and studied medicine under Dr. Sullard's instruction in preparation for taking a formal medical course. He first enrolled at the Geneva Medical College at Geneva, New York, and subsequently continued his training at the Albany Medical College, Albany, New York, from which he was graduated in 1853.

Immediately after his graduation Dr. Wheat began his medical career in his native Delaware County but after a year or so, again trending to the West, he moved to Tennessee. And not long after that, in 1855, he traveled into Iowa, perhaps by way of the Mississippi River from Memphis to Dubuque. In the following winter he entered Minnesota in true pioneer style, having got a ride on a bobsleigh, he much later told his children.

In 1856 Dr. Wheat took up land in Fillmore County and established his office and home in the new little settlement of Lenora, platted around a cross-roads in northeastern Canton Township. When presently a local school district was organized, he served on the school board, and after a little red schoolhouse was built in the autumn of 1856 just south of Lenora, he was one of the first teachers. It was as a member of the board that he first met Almira Electa Foote, a native of Clinton, New York, who came to Lenora in the early sixties from Spray River, Wisconsin, to apply for the school. Dr. Wheat and Miss Foote were married on June 10, 1862; two children were born to them, James Foote and Ida May.

With the coming of the Civil War Dr. Wheat tried to enlist in the Union Army but he was rejected because of his health, which never had been robust. Tall, thin, and frail-looking, he was wiry and, more important, courageous. Throughout the period of the war he met the rigorous conditions of frontier practice, made more difficult by the national crisis, giving his time and skill freely without thought of payment, and this was always true of him, sometimes driving or riding on horseback days in succession to visit his patients when he was little able to do so. He was not an even-tempered man, but although a little irritable when fatigued, he never was ill-natured and he was known all his life as a real friend to those whom he served. In the early period of the war and at the height of the Sioux uprising in southern Minnesota, Dr. Wheat returned home after one of his longer absences to find the village

deserted, his family gone with the rest. There were hours of dismay and frantic search until he learned that the villagers had fled to the east because of an Indian scare. The report fortunately was unfounded, Dr. Wheat overtook the caravan with the good news and the settlers returned. This small but complete exodus was a favorite joke with the Wheats and other families for many years.

From the beginning of his life in Minnesota Dr. Wheat was a useful citizen. As noted, he served on the first local school board. For three years, from January, 1865, to January, 1868, he was county coroner; in 1873, at least, he was in attendance at the county poor farm in surgical cases. In 1875 and again in 1877 he (and Dr. H. C. Grover, of Rushford) was elected as a representative of the district in the state legislature, and in 1878 and 1879 and from 1881 to 1886, inclusive, he was state senator. His years in the legislature were made notable by the impeachment and trial of Judge Sherman Page, in 1878, and of Judge E. St. Julien Cox, in 1882, and particularly, in 1881, by the ratification of the constitutional amendment "The Swamp Land Act," for which Dr. Wheat long had worked, in the face of bitter opposition, and of which he was the author. The amendment provided that from the sale of the remaining swamp lands of the state a fund should be established, one half of the income from which should go to the schools and the charitable institutions of Minnesota. Of apparently little import at the time, in public opinion, the measure secured to the schools and institutions an ultimate benefit of great worth.

Medical organization began early in Fillmore County, as has been noted, and Dr. Wheat was identified with it as charter member of the Fillmore County Medical Society that was founded in the autumn of 1866, and as one of the committee to draft the constitution and by-laws and the fee bill. And on February 23, 1875, at the annual meeting of the Minnesota State Medical Society he became a member of the organization and was appointed to the Committee on Epidemics, Climatology and Hygiene. Four years later he became a member of the Committee on Finance, on which he served for the remainder of his residence in Minnesota. At the annual summer session in 1885 Dr. Wheat reported a case, of which his excellently written account is on record, of intra-uterine fibroid tumor of five years' duration and the surgical operation for removal of the growth, performed on July 8, 1884, a procedure in which he gave credit to Dr. Henry H. Haskin, of near-by Canton, who often assisted him in surgery. Dr. Wheat was versatile; he was dentist on occasion; and in cases of whatever type, he did not allow lack of especially designed equipment to be a barrier to proper treatment. Once when he had set a broken elbow joint of a small girl, he prescribed that the child should carry a flatiron (probably the kind with the handle molded into the body of the iron) in the hand of the injured arm; the advice was followed and full function of the arm and joint resulted. Under the act of 1883 to regulate medical practice in the state Dr. Wheat on May 2, 1884, registered as from Preston, obviously through a clerical error, received certificate No. 894 (R).

A constant student in his profession, Dr. Wheat read widely in other fields as well and also exercised his gift for writing poetry. He was a member of the Congregational Church and of the Masonic Blue Lodge of Preston, which he joined, it is recorded, on October 12, 1864, when he was thirty-eight years old. An excellent extemporaneous speaker who always gauged well his audience and the circumstances, he was much in demand as spokesman at weddings, funerals and other less solemn special occasions. In histories of the county

there are references to Dr. Wheat as maker of appropriate remarks at a golden wedding, as giver of a eulogy at a funeral and, in 1878, as a speaker at the initial meeting of The Old Settlers' Association of the Southern Tier of Counties in Minnesota, of which he was an organizer. And in the same histories it is written that he "probably has traveled more miles and attended a greater number of patients than any other doctor in the county." Throughout his residence in Lenora he was the only physician in the village and, whatever the conditions of his practice, he maintained home and office on his farm near by. When after many years he moved from Lenora, he was succeeded by Dr. Jay Le Roy Sackett, of regrettably brief professional career.

Although never a restless man, Dr. Wheat had a keen interest in progress, in travel and in new scenes and when, in 1883, the Northern Pacific Railway Company completed its line to the Coast, he was a passenger on the first through train "to see what is out there." It is not surprising that when the time came for a change of residence, the West was his choice. In the winter of 1886 Dr. Wheat contracted a severe cold from which recovery was tedious and unsatisfactory; knowing that he probably could not survive another severe Minnesota winter, he sold his farm home near Lenora and his other considerable property in the community and early in September, 1887, moved with his family to the newly established town of Redlands, San Bernardino County, in southern California. One lingering regret of his children, at least, even among the attractions of the new home, was the Big Spring of cold clear water in a tract of woodland that Dr. Wheat had owned between Lenora and Canton.

Dr. Wheat had intended to retire from medical practice, but the community of Redlands was young and growing and there was such urgent demand for an experienced physician that he obtained a California state license and continued his active professional life. For many years, until only a few months before his death, he was the city health officer of Redlands and was for long the secretary of the Redlands board of health. As his son has said, "He grew up again in a new place and lived to a ripe old age, active in his profession and respected by all who knew him. He gave his time and his skill for many years without regard to his own well-being."

James Madison Wheat died at Redlands on November 27, 1910, from a stroke. He was survived by his wife and the two children. The daughter, Ida May Wheat, who became an accomplished musician, died in 1918. Mrs. Wheat lived until June 25, 1933. James Foote Wheat, the son, in 1943 continued to reside in Redlands, where at different times he had served as city treasurer, county recorder, postmaster of Redlands and, more recently, president of the Redlands Real Estate Board.

A. C. White, physician and surgeon, established his office and residence in Preston in October, 1871. A Preston newspaper stated that he recently had come from Muskegon, Michigan, and that he had the confidence and recommendation of Dr. Lafayette Redmon (a practitioner of superior type) who was about to leave the county. Nothing further about Dr. White has been observed.

Alvah Fancher Whitman, who for fifteen years was to be a physician of Fillmore County, Minnesota, was the son of William H. Whitman and Malissa Green Whitman, both natives of New York State, and was born at Galway, Galway Township, Saratoga County, New York, on November 29, 1831. Wil-

liam H. Whitman, a miller, came of a family who were early in the state, as did Malissa Green. The Whitmans were of the same line as Marcus Whitman, medical missionary into the Northwest.

When Alvah Whitman was eight years old, in 1838, his parents with their young family moved into the Middle West and were among the earliest settlers in Brunswick, Shelby County and, a little later, in Sun Prairie, Peoria County, Illinois. In the local schools of these communities their five children, Alvah, Charles P., James E., Harriet M. and Nancy C. Whitman obtained their early education.

When Alvah was only fourteen years old, the sudden death of his father from typhoid fever during an epidemic of the disease left him the head of the family, and in the years of struggle that followed, his native qualities of thrift, self-reliance and self-forgetfulness developed into characteristics that distinguished him all his life. A few years after her husband's death Malissa Whitman was married to James Pettit and she moved with him and her children to Waupun, Wisconsin, where Alvah Whitman entered high school. Already intent on becoming a physician, the youth early began teaching school in order to earn money for college and by 1851 he was able to matriculate at the University of Wisconsin. There he studied for three years, but when that period came to an end his funds reached an end also and as an expedient on leaving college he joined a surveying party which was to lay out the right of way for the old Milwaukee and La Crosse Railroad from Beaver Dam to Portage, Wisconsin, and to the site of the present Hampton, Iowa. At Hampton he exchanged his transit for real estate and for a time devoted himself to farming and to teaching school.

He cherished his dream of becoming a physician and in 1862 returned to Waupun, Wisconsin, to study medicine in the office of Dr. H. L. Butterfield. Probably in the next year he entered the Medical School of the University of Michigan, at Ann Arbor, for in 1865 he was graduated with his degree of doctor of medicine. On October 2, 1865, he was married to S. Mathilda Smith, a schoolteacher, and in that autumn, at Charles City, Iowa, he began his medical career. Dr. and Mrs. Whitman had one child, who died at birth.

In 1868 Dr. Whitman settled in Spring Valley, Fillmore County, Minnesota, where for the next fifteen years he practiced medicine, in and about that village, in his own county and in neighboring counties, developing a wide and friendly acquaintance among the laity and the members of the medical profession. Some of his medical colleagues in Spring Valley in those years were, in roughly chronological order and in varying lengths of residence, Wallace P. Belden, Russell L. Moore, French W. Thornhill, Lyman Viall, Frans J. Van Mackelenbergh and Charles H. Wagner, and, early and briefly, J. J. Morey, afterward in Etna, and G. M. Pingree. Shortly after his arrival in Fillmore County Dr. Whitman allied himself with the Fillmore County Medical Society, which had been founded in 1866; he sometimes mistakenly has been listed as one of the charter members. When, in 1879, the society suspended activities, he was serving as its secretary. He became a member of the Minnesota State Medical Society in 1871 and there is evidence that he co-operated faithfully with the State Board of Health (organized in 1872).

Of fair complexion, with light brown hair and blue eyes, about five feet eight inches in height, heavy-set, free from addictions, peaceable and genial in disposition, he was well liked and has been remembered with respect. Always interested in promoting education, it was he who started the first

public library in Spring Valley, setting aside a small room in his office building for the purpose, and he helped many struggling young students, smoothing their educational and financial paths. Although his practice was general and he was considerate of old and young alike, he was devoted to children, who were very fond of him, and he was especially successful in treatment for children's diseases, bringing to his cases not only his ability as a physician but also an almost equal ability as a nurse. And although it does not always follow that a person who is gentle with his own kind is gentle with animals, Dr. Whitman valued animals and was considerate of them. He treated his horses well and enjoyed their confidence and faithfulness; during times of unusual outbreaks of sickness, which meant long weary drives into the countryside, he could not count on regular hours of sleep and therefore would doze in his carriage or his cutter, according to season, on homeward trips, trusting the horses to take him safely. And they never betrayed his trust, but jogged evenly along until they reached their own barn door, when Dr. Whitman would awake, to stable them and feed them in preparation for the next trip, soon to come.

In the early years in Spring Valley Dr. Whitman's professional card appeared in the local *Western Progress,* symmetrically spaced for harmonious effect and worded as follows: "A. F. Whitman, M.D., Physician and Surgeon. Residence, 1st house north of the Congregational Church, Spring Valley, Minnesota." He attended services at both the Congregational and the Methodist Churches and for several years taught adult classes in Sunday School. Although he did not write for publication, he had a gift for using words which he employed in compiling an account of his early life that has been preserved among the family records. Perhaps his greatest creative pleasure lay in gardening. Besides trees, shrubs, berry bushes, a grape arbor and vegetables, he had a large and beautiful flower garden laid out in the formal geometrical beds that were much admired in those days. There was none comparable in the village.

Not long after Dr. Whitman settled in Spring Valley, his stepfather and his mother, Mr. and Mrs. James Pettit, came there also to make their home. A note has been observed in a county history of 1912 that on September 16, 1881, Mrs. Pettit was seventy-six years of age.

In 1883, disposing of his home, his office building and his farm on the outskirts of Spring Valley, Dr. Whitman moved to Saint Paul, where he continued to practice; his residence was on Dayton Avenue. On December 28, 1883, under the medical practice act of that year, he received state certificate No. 488 (R). In this period of his life he became a member of the Ramsey County Medical Society and for a time served as its necrologist. He attended the Plymouth Congregational Church and later the People's Church of Saint Paul.

Alvah Fancher Whitman died in Saint Paul on December 21, 1913, a few days subsequent to a stroke, in his eighty-second year. Mrs. Whitman survived until August 22, 1919.

G. M. Willis was a pioneer physician in Fillmore County. In the autumn of 1866, then a resident of the village of Carimona, in Carimona Township, he was one of the founders of the Fillmore County Medical Society and at the organizational meeting in the office of Dr. Redmon of Preston, on October 17, was elected corresponding secretary of the group. Other mention of Dr. Willis has not been noted. In 1867 and 1868, as recorded in *The Minnesota*

Railroad and River Guide, G. M. Willis, perhaps the same man, was postmaster in Rushford, Carrolton Township.

A **Dr. Wilson** was in Chatfield, Fillmore County, from the early sixties well into the seventies, according to sparse evidence. The *Preston Republican* of February 5, 1864, announced, "Dr. Wilson of Chatfield is in town," and in a commercial register of the summer of 1872 there was listed Dr. ——— Wilson of Chatfield, apparently a fair business risk. As far as inquiry has been possible to the writer, Dr. Wilson does not live in the memories of Chatfield citizens. There seems possibility, if not probability, that the Dr. Wilson of Chatfield and Dr. Henry L. Wilson (H. Wilson), sometime of Carimona and Preston, were the same.

Henry L. Wilson (usually H. Wilson), came to Carimona, Carimona Township, it has been said, in the fifties and there practiced medicine for about seven years. Sometime in the middle sixties, again hearsay, Dr. Wilson left Carimona, perhaps left the county, but after some years he returned and opened an office in Preston. After a few months in that village he moved permanently and "his last years were spent in the new southwestern Minnesota, where he died. He was considered a very competent physician for his time."

Fortunate access to some early newspapers of Fillmore County and of Olmsted County gave a few notes that helped in piecing together a story of this physician. In August, 1864, Dr. Wilson, of Carimona, was appointed assistant surgeon in the Sixth Minnesota Regiment of Volunteer Infantry, in which Wallace P. Belden of Spring Valley was a senior surgeon; the two men received their appointments on the same day in St. Paul and traveled homeward together as far as Rochester. Dr. Wilson served with the regiment until August 19, 1865. When, on October 17, 1866, at Preston, the Fillmore County Medical Society was organized, as stated previously, Dr. Wilson, still of Carimona, was present and was appointed a member of the committee, with Dr. J. M. Wheat and Dr. A. H. Trow, to draft the constitution and by-laws and a fee bill. Although his name did not appear again in notices concerning the society, he was in the county into the winter of 1867, as evidenced by official record of his remuneration to considerable amounts for attendance on paupers. On January 12, 1867, however, the *Rochester Post* announced that Dr. H. Wilson, "formerly surgeon of the sixth regiment," had called on the way to Saint Paul, where he intended to locate for the practice of his profession. "He abandons a large and paying practice in Fillmore County, and with his acquirements, experience and established reputation as a surgeon is sure of a successful career at the capital." On March 9, 1867, the *New Federal Union*, of Rochester, stated that Dr. Wilson had established himself at Dundas, Rice County, where he had bought a first-class drugstore. The next news of him came in the *Preston Republican* of February 12, 1869, in which it was announced that he had resumed the practice of medicine in Fillmore County, in the village of Forestville, and that he would be ready at all times to attend the wants of the afflicted. Forestville is about four miles southwest of Carimona and is in Forestville Township, which borders Carimona Township on the west. Two weeks later the editor of the paper added to Dr. Wilson's official announcements the statement that Dr. Wilson had returned to the county and that "he has all the business he can attend to."

It was on May 3, 1869, as nearly as can be established, that the Fillmore County Eclectic Medical Society was organized in Preston at the office of Dr. Orson A. Case, and it was then that Dr. Wilson, evidently eclectic in thought, transferred from the Fillmore County Medical Society to the new group. In this year and for a time in 1870 he served as president and as such he requested the secretary, Dr. J. W. Eighmy, to forward copies of the proceedings to the county newspapers and to the *Chicago Eclectic Medical Journal.*

Dr. H. Wilson, according to his professional cards, was still in Forestville into November, 1870. Announcement of his removal to Preston or elsewhere was not noted, but it seems probable that sometime in the early seventies he went into southwestern Minnesota. Under the Affidavit Law of 1887 Dr. Wilson received an exemption certificate. As late as 1890 he was in Woodstock, Pipestone County.

O. Wold, with offices on Jessie Street, was practicing medicine in Rushford around 1869-1870. His name was observed in a business directory of the period but not in any medical directory.

Fordyce Worth, a resident of Hesper, Winnesheik County, Iowa, a village about two miles below the Minnesota state line and directly south of Mabel, Newburg Township, Fillmore County, was by citizenship a physician of Iowa, but beginning in 1870 his practice extended well into Fillmore County, Minnesota. Long before the village of Mabel (founded in 1885) existed and, in fact, long before any resident physician of Fillmore County lived in the community, Dr. Worth was a trusted physician in that region. (Dr. Charles W. Cady settled in Mabel in 1892; Dr. A. P. Lommen began to practice there in 1895; and Dr. Hildus A. O. Nass came in 1898.) Today, the remaining pioneer citizens of the community, some of them now residents of Mabel, associate Dr. Worth definitely with their early history. For that reason biographical notes concerning him are included here.

Fordyce Worth was born on December 9, 1831, at Starkboro, among the hills of northeastern Addison County, Vermont, the son of a farmer. His mother, whose maiden name was Carpenter, was American born, the daughter of a Quaker family. When Fordyce Worth was seventeen years old and after he had received his early education in the local schools, he went to Mt. Gilead, Ohio, where he served for two years as an apprentice in a machine shop. The next three years he spent in the lumber trade in Wisconsin. By that time, 1853, having determined on the profession of medicine, he began his medical study, probably under a preceptor, and presumably he continued thus for the next several years. In 1856 he bought property in Winnesheik County, Iowa, and there opened a general store. In 1859, it has been said, he went to Chicago to the Bennett College of Eclectic Medicine and Surgery. Either his medical education was interrupted further and for a long time or there has been error in the recording of dates, for he was graduated in 1870; it seems likely that he matriculated in 1869 and took his degree the following year; a formal course of a year was usual at the time, especially if a student had for a considerable period worked under a preceptor.

After his graduation in 1870 Dr. Worth settled in Hesper, and in October, 1871, succeeding Dr. W. C. Battey, Hesper's first postmaster, Dr. Worth was appointed to the office, which he held for the ensuing twenty-seven years. In 1886, under changing laws of medical practice, he was licensed as a physician in Iowa and on February 25, 1887, he received Minnesota license

No. 1310 (E). He was a Mason (A. F. and A. M.), a member of the Decorah Lodge No. 181, and a member of the Modern Woodmen of America.

In 1856 Fordyce Worth was married to Sattie Keyes, a native of Ohio, at Muscatine, Iowa. There were two children of the marriage, Alice and Henry. A vivid little picture of Dr. Worth has come down the years from a Christmas when his children yet believed in Santa Claus; to aid illusion the doctor made large and convincing tracks in the snow up and down the shed roof which led to the chimney, and correspondingly through the yard, to suggest that the reindeer had been waiting just outside.

After his wife's death, in 1886, Dr. Worth was married for the second time, in 1888, to Dr. Louisa Day, who was born in 1850 and who graduated from the Bennett College of Eclectic Medicine and Surgery in 1879. From Hesper, Dr. Worth and Dr. Louisa D. Worth together carried on their large medical practice which extended, as has been noted, into Fillmore County, Minnesota.

Dr. Worth survived his second wife and he continued his medical practice until about 1918, when ill health forced him to retire. When he died in March, 1920, he had for some three years been making his home with his son, R. Henry Worth, of La Crosse, Wisconsin. His daughter, Alice Worth Edmunds, had died previously. In 1943 Mr. R. H. Worth continued to reside in La Crosse.

Do we "idealize the doctor some?"

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DONALD BANNERMAN PRITCHARD (1865-1931)

An unsigned article, *History of Medicine in Winona County,* which appeared in *Minnesota Medicine* in 1940, unfortunately did not include a biographical sketch of Dr. Donald Bannerman Pritchard, of Winona. Therefore the following sketch, which originally was prepared as part of *Notes on the History of Medicine in Fillmore County,* because of Dr. Pritchard's early residence in Rushford, is presented now.

Donald Bannerman Pritchard, who was to become one of the distinguished physicians of Minnesota, spent the first two years of his professional life as an able practitioner in the village of Rushford, Fillmore County, and the ensuing forty-two years in Winona, Winona County.

Born at Fort Garry (Winnipeg), Canada, on February 19, 1865, Donald Bannerman Pritchard was the son of Samuel Pritchard, an English Episcopal minister, and Johanna Bannerman Pritchard, of Scotch birth. The Reverend Mr. Pritchard and his family were early settlers in the Winnipeg district, which was under the domination of the Hudson's Bay Company; the five children were Donald, Adelaide, Robert, Charles and Ida. In 1943 the only member of the group living was Adelaide (Mrs. Richard Goodrich) of California.

Educated in academic subjects at St. John's School and College, an Episcopal institution in Winnipeg, and in medicine at the University of Edinburgh, Scotland, where he studied four years, Donald B. Pritchard was graduated at Edinburgh in 1887. In after years he took postgraduate work in Philadelphia. On his return to America, Dr. Pritchard was licensed by examination to practice in Minnesota, receiving certificate No. 1370-1 (R) on April 20, 1887, and he at once settled in Rushford. On October 27, 1891, he was married to Mary E. Hanson, an American girl, of Rushford. The two children of the marriage were Helen B. Pritchard (in 1943 registrar at the Winona State Teachers College) and Margaret, who died on November 4, 1930.

In 1889, shortly after moving to Winona, a larger town than Rushford and situated advantageously on the Mississippi River, Dr. Pritchard became a member of the Winona County Medical Society. Note should be taken of

his paper, "The Contagiousness of Tuberculosis," that he presented on admission to the group. Written thus early in his medical career, it was original and of striking text on a moot subject, and it aroused spirited and acrimonious argument among a group of mature physicians. In the fifty years and more that have elapsed since that reading, only one statement in the exposition of his theory and conclusions has failed of confirmation; namely, that a perfectly healthy individual would not contract tuberculosis and that "it is only after the health has become below par from the many influences that may bring about such a result that it is possible for the bacillus to find a resting place." In recent years, at a meeting held under the auspices of the Buena Vista Sanatorium to honor Dr. Pritchard's memory, that paper again was presented, and it was discussed from the standpoint of its wisdom and lasting value.

A general practitioner and surgeon, Dr. Pritchard practiced independently in Winona for one year and then entered into partnership with Dr. J. B. McGaughey, with whom he remained until Dr. McGaughey died in 1908. In 1901 a firm known as "The Associated Physicians and Surgeons" was organized, in which Dr. Pritchard and Dr. J. B. McGaughey were associated with Drs. E. D. Keyes, N. S. Lane, H. M. Lichtenstein, Oswald Leicht and H. F. McGaughey. This firm continued for several years. Later Dr. Pritchard again practiced alone, occupying offices with Dr. Lichtenstein. In 1930 and 1931 he was associated in practice with Dr. L. I. Younger.

Dr. Pritchard lived a useful life, a moving spirit in professional and civic progress. He was a member of county, state and national medical associations and of special professional groups. The first physician of Winona to become a Fellow of the American College of Surgeons, he was also a member of one of the national standing committees of the College. Chief organizer of the Winona General Hospital, which was established in 1894, he was largely responsible for obtaining funds for construction of the hospital buildings, and he served continuously as a member of the board of trustees until his death in 1931. When the executive committee of the hospital board was organized, he was its first chairman, and thereafter its secretary; he was also president of the hospital staff for many years and was an instructor in the nurses' training school of the hospital. Dr. Pritchard served as city health officer of Winona from 1907 to 1919 and in that time brought about many vital improvements in administration. He is recognized as the originator of the present city health department. For a number of years he was on the Board of Health of Winona County as well. For six years, during four of which he was its president, he was a member of the Board of Education of Winona.

Dr. Donald Bannerman Pritchard died in Winona on September 22, 1931, survived by his wife and his daughter. In tribute to him, the Winona *Republican Herald* published editorials, from which much of the foregoing information was drawn and from which the following excerpt was taken:

> It would be unfair to other Winonans to say that Dr. Pritchard built the Winona General Hospital, or that he was the individual responsible for Winona County's fine system of modernized highways, but it is proper to state that Dr. Pritchard was the energetic force that made Winona realize these needs and crystallized public sentiment into concrete action. Today these and other attainments of this Winonan may appear to be simple natural developments in community life, but that conclusion is the evolution of the idea. The pioneering that Dr. Pritchard persistently did for these humanitarian necessities was as hazardous as was the building of the first house on the Winona prairies. It required vision and energy to combat popular sentiment and leave the path of least resistance. The hospital building, and the ribbons of concrete and other fine highways that cross this county are demonstrations of how this Winonan attained his visionary goals.

—Nora H. Guthrey

President's Letter

NO FIRMER FOUNDATION

"A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration."

Thus begins the statement of the Principles of Medical Ethics, Section I, Chapter 1, formulated by the American Medical Association. Medicine, one of the highest professional callings, can have no better nor firmer foundation. It is by the closest adherence to this principle that the profession should be able to withstand any man-made threats to its prestige and its freedom.

One such challenge to the sincerity of the medical profession has come with the extension of the services of the government in providing for the social welfare and security and the entrance of a third party into the doctor-patient relationship. This third party is the agency, which supported by taxes or public funds, pays for medical care for such groups as the indigent, the aged, the blind or disabled, veterans and inmates of correctional institutions. Non-government agencies and other organizations have come into existence which also provide care for certain groups of persons.

This third party poses a major problem which the medical profession must solve. Physicians must provide constructive leadership so that high-type medical care is assured all persons who come under the jurisdiction of the various agencies or who look to these agencies for help in meeting the cost of needed medical care.

A specific problem which requires close co-operation between the profession and the agency is that of the establishment of a fair and equitable schedule of fees. Most of the schedules arrived at by the various agencies have been fair; seldom have they been excessive; and, of course, sometimes they have been quite low. The feeling of responsibility for those unable to pay is strong in the physician, and when the patient is indigent, most physicians render adequate service regardless of fee. This is most commendable. This service is, in fact, the cornerstone of the profession's public relations. At the same time, no reasonable person expects the profession to assume full responsibility for *every* indigent patient. By working together physicians and agencies which they serve can arrive at agreements that will be satisfactory to both.

It is the occasional resorting to dishonorable practices and the use of devious methods to increase fees that must be eliminated if the good name and good will of the entire body are to be safeguarded. If a small minority of the profession is allowed to continue in its efforts to get the most possible for the least amount of effort when the third party pays the bill, private medicine's high aims will fall short of achievement and its objectives will be seriously challenged.

That must not happen. Petty self-interest has no place in medicine. If in the past physicians had allowed themselves to place personal gain before duty to the patient and to the public, medicine could never have achieved its present eminence nor its record of accomplishment. Medicine was founded on service to mankind and all of its organizational activities are

directed to the improvement of that service. Physicians worthy of the name ask themselves not "What will I get out of this?" but "How can I best serve?"

The personal integrity of every member of the medical profession is its best weapon against the political quackery which today threatens the world. In our own country, congressional miracle workers are constantly propounding new cure-alls for the people's ills. The formulas, however, always have the same basic ingredient—compulsory health insurance. The latest preparation of these do-gooders is labeled S.1320—a bill to provide a federally-administered national health insurance and public health program.

The bill represents a philosophy foreign not only to doctors of medicine but to the country as a whole. It would mean the entrance of government into still another field—that of the private practice of medicine—and it would edge the country one step nearer totalitarianism. Who can stop the government from practicing medicine. The answer is YOU, Doctor.

We have agreed that some form of insurance is one way to meet the cost of illness; but we debate whether compulsion should have a part. If we maintain that compulsion should not enter the picture, then we must show that the voluntary method will work. The voluntary prepayment medical care program is the godchild of organized medicine. It is up to physicians to see that it has every opportunity to grow and develop to the limit of its possibilities.

This is going to mean some sacrifice on the part of the medical profession, together with a firm resolve to place the common good above personal gain. Men of medicine should by reason of their fibre be able to meet this challenge. We can meet the requirements of any program which the government has set up by co-operating as far as possible with agencies providing medical care. We can also make voluntary health insurance work.

It's up to us now. We have a chance to prove ourselves. Let us make the most of it.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

PROPOSED BLUE CROSS-BLUE SHIELD MERGER

THE information broadcast in the January 19 issue of *Time* that Dr. Paul R. Hawley, recently resigned medical director of the Veterans Administration, had been appointed the administrator of the Blue Cross-Blue Shield merger on a national basis, came as a surprise. The announcement was made by Roy E. Larson, president of Manhattan's United Hospital Fund and former director of the New York Blue Cross, at a joint Blue Cross-Blue Shield dinner held in Washington, January 10. The assumption seemed plausible that all the Blue Cross and Blue Shield organizations, the former with 29,250,000 and the latter with a membership of 7,250,000, had effected a national organization.

The announcement in view of the facts seems unaccountable. No such merger exists. As a matter of fact, meetings are being held in March to consider the advisability of such a step. So far a report of a subcommittee of the Blue Cross-Blue Shield committee, including tentative by-laws, was approved February 3 by the Blue Cross Commission, and the proposal was discussed at a joint meeting held in Chicago March 6 and is to be considered at a meeting of the Blue Shield Commission in Los Angeles, March 26 and 27.

There are those who believe it would be a distinct advantage to the growth of both Blue Cross and Blue Shield plans if the two organizations were to be combined on a national scale to provide uniform policies and procedures and to facilitate insuring on a wider than state basis. The thought too has been expressed that such an organization might be of value in contacting governmental agencies in the hospital and medical care of the indigent on a state or national basis.

Notwithstanding the advantages of such a merger of hospital and medical insurance plans, the proposal has already met strongly voiced opposition and is likely to meet still more. The following appeared in an editorial in the March issue of *Northwest Medicine:*

"Announcement of a 'merger,' when in fact there was no merger, struck many western doctors as resembling an effort to stampede such a merger by presentation of what might be accepted as a *fait accompli* by the uninformed or unthinking. Actually, it has come to be considered nothing but a brazen attempt, using the prestige of Dr. Hawley's recent success with the Veterans Administration, to accomplish at the national level what has repeatedly failed or been rejected at lower levels."

Recently, representatives of Blue Shield plans of California, Oregon, Idaho, Montana and Utah met in San Francisco and drew up resolutions to the effect, in brief: (1) that inasmuch as Blue Shield plans are the responsibility of the medical profession, any national merger should recognize the parity of the Blue Cross and Blue Shield groups; (2) that any encroachment by the Blue Cross or any similar institution into assumption of responsibility for prepaid medical care in the United States is undesirable and must be stopped, and (3) that an independent national insurance corporation which upon formation would thereupon be in competition with other commercial insurance companies on a national scale is undesirable and should not be created. Finally, they consider the proposed merger on a national basis undesirable and at variance with the best interests of the future of voluntary medical care plans in the United States.

A perusal of the by-laws of the proposed merger indicates that, if adopted, there is little evidence that the medical profession would have much voice in determining policies of the new association. Individual Blue Shield organizations, while operated by members of the AMA and state medical associations, are separate and distinct organizations. The organized profession has received little or no consideration on the part of those who have been trying to effect this merger. It is not difficult to see that the proposal involves the formation of a powerful national organization which may take control of the Blue Shield plans out of the hands of the medical profession.

NATIONAL PHYSICIANS COMMITTEE

ON the evening of February 27, 1948, representatives from many of the county medical societies of the state met at the Lowry Hotel, Saint Paul, to hear of the activities of the National Physicians Committee and of the need of such a medical publicity organization to counteract the insidious propaganda which is being conducted by socialists and communists alike to undermine our economic system. Socialists favor the ultimate socialization of all industry, and medical practice heads the list. The communists constitute a political party taking its directions from a foreign government and have the avowed purpose of destroying our form of government by any means, including violence. There are only too willing to aid the socialists in their aims.

Dr. Louis A. Buie's President's Letter, which appeared in our November, 1947, issue, contained a complete statement of the commendable record which the NPC has made during the past decade in publicizing the truth about medical practice in these United States and the subversive activities of communists and so-called "social reformers" in their efforts to destroy the American way of life. Any member who has not read that President's Letter should do so.

There has been some uncertainty on the part of some of our members as to the status and even as to the need of such a publicity organization as the NPC. It was organized by some outstanding members of the AMA, who saw clearly the need of united action to counteract the activities directed towards the undermining of medical practice and private enterprise in general. Members of the NPC are all outstanding members of the AMA, and many have given generously of their time and talent to the activities of this organization. It may have been felt by some physicians that with the establishment of the Committee on Medical Service of the AMA there was less need for the NPC. This is not the case. While the Committee on Medical Service is doing valuable work in the furthering of medical insurance and keeping in touch with legislation, anyone who heard the NPC representatives, Ed. Stagen and Arthur L. Conrad, depict the astounding and widespread underhanded activities of the communists in our country must have realized that there is more to do than the Committee on Medical Service can possibly accomplish alone. The facilities of the NPC enable them to go much farther in the ferreting out of communistic activities which are permeating educational institutions and affecting the youth of our country in the colleges and even grade schools.

Those representatives from the various county societies who attended the February 27 meeting, called by Dr. Ed Hayes of Minneapolis, constitute the State Committee co-operating with the NPC. All who were present must have been impressed by the seriousness of the threat, not only to medical practice but to individual freedom in our country. They will doubtless carry the message to their county medical societies and present the goal of every society member, a member of the NPC to their confreres. Not only can the members of the profession do their part by supporting the NPC financially, but in their contacts with the laity and as members of school boards can fight the communistic and socialistic underhanded propaganda which has found its way not only into school textbooks but into a number of organizations which innocently or underhandedly give their aid and support.

GASTRIC RESECTION VERSUS VAGOTOMY

RECENTLY, the results of surgical procedures for treatment of peptic ulcer at the University of Minnesota have been reviewed. In this investigation 416 consecutively operated cases of peptic ulcer were considered. The mortality in elective cases was 2.9 per cent. The operation recommended consists of at least 75 per cent resection of the stomach, followed by a retrocolic anastamosis with the jejunum at the duodenojejunal junction producing a short afferent loop with inversion of the lesser curvature in the Hofmeister pattern. The recurrence rate of ulcer after this operation was less than 1 per cent. There are probably few series in which so many cases have been reported, the mortality as low, and the cases so carefully studied. There is no question but that the experimental work of Wangensteen and his co-workers concerning the pathogenesis of peptic ulcer is the most comprehensive and conclusive to date.

Within the past few months, two surgical journals have devoted several articles to the question of vagotomy in the treatment of duodenal ulcer.[1,2] The rationale of vagotomy is that it decreases gastric tone and the amount and degree of gastric

acidity. There is some experimental clinical evidence to show, however, that within a year or two after vagotomy, the fasting acidity and motility of the stomach readjust themselves to denervation and return to normal values.

Most surgeons perform vagotomy through a transabdominal approach, by which route the vagus can be completely sectioned in 80 to 90 per cent of cases. While one can be surer of cutting all the vagal fibers through the transthoracic approach, the fact that the transabdominal approach permits examination of the ulcer is a decided advantage. There is no question but that duodenal ulcers in some instances heal following vagotomy and the patients become symptom free. How permanent this healing is, no one can say at present. Some ulcers heal even after a gastroenterostomy, but it is generally agreed that the frequent development of jejunal ulcer following this operation makes it undesirable. Just what patients should be subjected to vagotomy is not clear. Certainly vagotomy should not be resorted to in the treatment of gastric ulcer. One must review the cases of ulcer treated by vagotomy as critically as those treated by gastric resection. If, with time, it can be proved that patients with duodenal ulcer treated by vagotomy have permanent healing with a low incidence of recurrence and complications, it may be the operation of choice. In the meantime to be sure of curing a complicated gastric or duodenal ulcer, gastric resection is the procedure of choice.

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CHARLES E. REA, M.D.

CANCER CONTROL PROGRAM QUESTIONNAIRE

Three thousand eight hundred and eighty-one questionnaires concerning the reaction of the physicians of Minnesota to Cancer Control Programs of various types were mailed out recently and there was a 52.7 per cent return. Dr. N. O. Pearce of the Health Department is to be congratulated on the success of this enterprise. Accuracy was sacrificed somewhat for simplicity since the participants were asked if they would endorse the projects listed, and they did not have an opportunity to express neutrality or complete objection. The responses were tabulated according to their source: Twin Cities, Duluth, Rochester, cities with a continuation of courses on cancer for physicians with 25,000. The Cancer Committee of the Minnesota State Medical Association wishes to interpret the replies to this study.

There was an overwhelming response in favor of continuation of courses on cancer for physicians with tuition and expenses paid. The total of 85 per cent of those responding endorsed this project with a somewhat lesser percentage favoring the University as the site of these courses and a two-day duration of the course with both clinical demonstrations and lectures as the method of choice. One-day medical educational projects given in scattered local areas should be given a further trial.

Forty-nine and six tenths per cent endorsed a free correspondence consultation service on cancer cases for physicians. The Cancer Committee felt that this project should be instituted in the near future in co-operation with Dr. Carl Drake, editor of MINNESOTA MEDICINE. Further announcements may be in the offing.

The profession decidedly favored employing qualified physicians to talk on cancer to medical societies and hospital staffs, 63.9 per cent endorsing the project. This falls in the realm of the Speaker's Bureau Committee which already has a list of physicians available for this purpose. The Cancer Committee favors an honorarium of $50 to $100 and expenses for these speakers.

On the question, "Shall we employ cancer specialists to hold free cancer detection clinics in local hospitals, quarterly or other intervals with referral of cases to private physicians?" 40 per cent of the profession endorsed the project. Since employing "cancer specialists" is quite objectionable to many physicians, the Committee felt that this particular type of cancer detection clinic should not be promoted. However, in the light of the great success of the one-day cancer detection clinic held at Fergus Falls, these clinics should be held in any location where a local County Medical Society feels that they are indicated.

A total of 40.3 per cent endorsed the provision for cancer information centers. In the only community where these have been tried, Duluth, 61 per cent of the physicians endorsed the project. It was felt that physicians should conduct the information centers if county medical societies wished to promote this project for their communities.

There was a surprising 63.3 per cent favoring the promotion of more adequate cancer facilities and services to assist the practicing physician. This was broken down into surgical, x-ray, radium, pathologic and hospital services. There was no agreement as to where improvement was needed except in pathologic services, where 47.3 per cent endorsed an improvement in this field. It is to be pointed out to the profession that physicians specializing in pathologic diagnosis of biopsy material are in the private practices of medicine and have previously voted unanimously not to accept any money for this service for indigent cases. The establishment of a pathologist in smaller centers depends upon his earning power in that locale. Interference with the biopsy source of income would seriously interfere with this eventual and ideal development in medical practice in Minnesota as it already has in other states. It was agreed that the pathologists should concede to some form

of subsidy in the cases of indigent and near indigent patients since many additional biopsies would be taken by physicians if there was a method by which patients would not have to pay directly for this service.

The Cancer Committee felt that the present facilities for training public health nurses in the field of cancer were adequate since there was only a 38.3 per cent endorsement of continuation courses on cancer for public health nurses.

There were 59.9 per cent favoring the provision of talks and motion pictures on cancer for lay people. However, only 47 per cent endorsed wide distribution of printed matter to lay people. The Committee felt that the benefits of lay education on cancer far outweighed any theoretical injurious effects of the procedure.

X-RAY SURVEY

A program of chest x-raying that will extend into 1951 is now in full operation by the Minnesota Department of Health, under the supervision of Dr. Hilbert Mark, director of the Division of Tuberculosis.

The program involves the use of three mobile x-ray units. Many of the surveys cover entire counties. During 1948, one unit is being used to x-ray the population of Benton, Sibley, Polk, and Beltrami Counties, rural Stearns County, part of Winona County, and part of the city of St. Cloud; another is now completing the St. Cloud and Winona County surveys and will later be used for Dodge and Marshall Counties. This unit will also be used to x-ray the Indians of Red Lake and White Earth Reservations and Mahnomen.

The third unit started in January an x-ray survey of students in colleges of the state; also all inmates of state institutions. It is expected that these two surveys will be repeated each year. The same unit will be used later this year in Nicollet County and during the summer in Washington County. The survey of colleges and state institutions will be resumed next October.

Up to the end of 1947, a total of 214,326 persons had been x-rayed, in addition to those included in the Minneapolis, Saint Paul, and St. Louis County surveys. Chest x-ray surveys conducted by the State Department of Health have been completed in Blue Earth, Steele, Freeborn, McLeod, Isanti, Carlton, Morrison, Wadena, Todd, and Kittson Counties, and requests for surveys have come to the Department from sixty-one additional counties. Partial surveys have been done in Dakota County (West St. Paul and So. St. Paul), Crow Wing County (Brainerd, Crosby, Ironton, Deerwood, and Pequot Lakes), Washington County (St. Paul Park and Cottage Grove), Western Stearns County, Polk County (Crookston, Fertile, and East Grand Forks), and Norman County (Ada). A calendar of surveys for 1949, 1950, and 1951 is now being prepared.

Persons found by the surveys to have any pathological condition of the chest are referred to their own physicians for advice and treatment.

SILLIMAN'S VISIT TO MINNESOTA

Benjamin Silliman was in many ways a remarkable man, for he not only introduced the teaching of the laboratory sciences at Yale University (and through this example his influence spread to many other American colleges), but he was responsible for first promoting instruction at the graduate level. The Sheffield Scientific School, which he helped to found, became the first American graduate school; and Yale, through the Scientific School, granted the first Ph.D. degrees ever to be awarded in this country.*

The Sheffield Scientific School fostered the practical application of the sciences at a time when we were expanding our natural resources and were acutely in need of technically trained manpower. Mr. Joseph E. Sheffield of New Haven, who endowed the School, was responsible for pushing the Rock Island Railroad through to the Mississippi River, completing the road in 1854. In celebration of this event, Benjamin Silliman and a party of Mr. Sheffield's friends (some 700 of them) were given a free excursion from New York to Rock Island in private trains. The party then proceeded in a fleet of river boats up the Mississippi to Saint Paul. The following extracts from Silliman's diary describing the frontier village as it was then and his visit to the Falls of St. Anthony are most interesting. The day before had been spent on Lake Pepin.

June 8, 1854. Arrival at St. Pauls, Minnesota (2,000 miles above the Gulf of Mexico; 744 [above] St. Louis). After the repose of a quiet night we had hardly time to finish our breakfast before we espied St. Pauls, the capital of Minnesota.

As the town stands on a high bluff, it is conspicuous at a distance and makes a very handsome appearance. It was said at the time of our visit to contain 5 to 6 thousand inhabitants—now in 1862 doubtless many more. Large warehouses, several churches and a spacious and elegant capitol, half a mile from the town, would hardly permit one to believe that a man to whom we were introduced built the first house in 1849.

Our passengers were soon on shore and ranging about the town. We, Mrs. Silliman and myself, did not go to a hotel but regarded the steamer as our home. In the evening the Governor and citizens gave a reception to Ex-President Fillmore and to members of the excursion. Mr. Fillmore is reported to have made an excellent speech and Mr. Bancroft, the historian, a very good one. There was also a ball and those who attended spoke in high terms of the ceremonial. *We* were too much fatigued by an excursion to the falls to attend the public assemblies and were glad to pass our evening quietly in the *War Eagle* not now agitated by moving engines.

Excursion to the Falls of St. Anthony. On our landing we found carriages standing in readiness for us. In connexion with an agreeable party we occupied a stage with four horses. We rode 9 or 10 miles over good roads wide and hard and passed an extensive prairie—a splendid tract of land—the greater part of which was fenced and under successful cultivation. Cattle and horses were numerous and in this region they are large and of superior breed. The general aspect of the country was inviting altho' in the latitude of the northwest part of Lake Superior.

(Continued on Page 305)

*Fulton, John F. and Thomson, Elizabeth H.: *Benjamin Silliman, 1769-1864, Pathfinder in American Science.* New York; Henry Schuman, Inc., 1947. xiv, 294 Pp., 14 pl.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CONSEQUENCES OF END OF HEALTH PROGRAM FOR MIGRANTS FEARED

(The dissolution of the health service program for migrant agricultural workers may have serious consequences to the medical profession and the public-at-large. This is the opinion of physicians who have carefully studied the program just ended last December and the federal proposals for the care of foreign workers in the future. It is recommended that members of the medical profession keep themselves informed of developments, and to provide physicians with an opportunity to examine the facts, the following article has been prepared by Dr. J. A. McElligott and Mr. C. B. Hoff, medical director and executive director, respectively, of the Midwestern Agricultural Workers' Health Association, which has its headquarters in Milwaukee, Wisconsin.)

The Midwestern Agricultural Workers' Health Association was formed to give medical service to the indigent migrant agricultural workers who were ineligible for medical welfare services in the various states because they lacked residential qualifications. Implementing it was the U. S. Department of Agriculture which had federal funds for this service.

In the spring of 1943, a conference was called by Dr. Franklin S. Crockett in Chicago during the time the House of Delegates of the AMA was in session. At this informal gathering were representatives of the Farm Security Administration (U. S. Department of Agriculture) and doctors from all over the United States including Dr. W. A. Coventry of Minnesota. The government representatives explained that they wanted to form a non-profit corporation to provide health care for Jamaican workers who, by agreement between governments, were to receive free medical care while they were in the United States harvesting vitally needed crops. In this conference the organizational structure and policies of the proposed organization were shaped after full discussion by the group.

The association or corporation was to be patterned after similar associations which had rendered service to small segments of the migrant population in other regions of the United States. However, the finished fabric was strictly a Midwestern tailored job. In June, 1943, three physicians and three laymen were selected as incorporators and members of the policy making board of directors. One of the lay members of the board had agreed to serve until the Michigan State Medical Society delegated another physician as a board member. The association was incorporated under the laws of the state of Indiana and registered to operate in Minnesota, Iowa, Illinois, Wisconsin, Ohio, Michigan, Kansas, Nebraska, Missouri, Kentucky, and the Dakotas. Shortly afterward a grant of federal funds was made.

Ideas New to Midwest

As new as the idea of corporation disbursing federal funds through a board of four delegates of organized medicine and three laymen might have been to midwestern medicine, the techniques of providing services to a scattered floating population was newer. At the first meeting of the board, it was resolved that services were to be rendered by private practitioners and hospitals on a fee for service basis. Negotiations were to be started with each of the twelve medical societies and liaison maintained with them in order to embody the suggestions of organized medicine into the operating plans. The patient was to have free choice of physician when more than one was available in the rural areas. Although the association was to have a physician as medical director, he was not to intrude between patient and doctor. Also at the very first meeting, it was decided that, although government funds financed the association, and some government employes were on the board, the association was not to be used for the advancement of alien philosophies of medical practice. The board adopted a rather positive attitude against the hiring of physicians on a salary basis to maintain the services, be-

cause the agreements with the Jamaican government provided that the workers receive the same care as the American population of comparable status received. The board interpreted this to mean good medical care, not cheap medical care. It is imperative to make it clear that the board of directors was nobody's rubber stamp from the very beginning. As time passed it entered more and more into the operations of the association. The board hired an executive director who was provided an executive committee of the board for assistance in making emergency decisions between board meetings.

In the peak year of operations, the association employed about sixty full or part time persons, mostly nurses, to administer the program for the 22,000 eligible workers in the twelve states. In that area over 4,000 doctors and hospitals rendered service to the workers at a cost of about $1.50 a worker for each month of their seasonal stay in the Midwest. It appears at this time that the costs of administration will be somewhere between ten and twelve per cent. The costs compare favorably with the cost of identical services elsewhere in the United States for the same kind of workers, even though the MAWHA did not hold the physician and hospital to a definite schedule of fees or limit the amount of diagnostic or therapeutic work done for a patient. Through the state medical societies, the association asked that vendors of service give the association the benefit of local relief rates, and they did, although no one in the association slavishly adhered to the rule in checking accounts. Early in the first year's operations it was found that in no two states and in few localities of the same states were the problems the same or the administrative solutions identical.

Peak of 2,500 Migrants Reached

Minnesota had 2,500 workers, Jamaican and Mexican nationals, during its peak year. There were foreign workers in the state for six months of the year although the numbers did not remain constant from month to month. They worked mostly in the southern part of the state and in the extreme western part of the state. In the latter location they harvested grain, but the larger group was employed in the southern Minnesota canning areas. Within these areas, 324 Minnesota physicians or hospitals were paid $42,203.09 for service rendered to eligible workers. It should be stressed that these figures refer to government transported workers only, as the association did not generally provide care for the far more numerous domestic migrant workers.

Early in the program the supervising nurse concluded an agreement with the major canning companies that the plant industrial nurse could give nursing services to workers who were housed in the canning company camps. This service is familiar to a good many Minnesota physicians.

A good many people think of the migrant as a war-time phenomenon. This impression is strengthened because during the war the government entered into the recruitment and transportation of workers, and health services were given largely to such transported workers, while self-transported workers were not given service except as under very restricted circumstances. It is well to think of the foreign and government transported worker as a wartime substitute for the domestic worker or at least a reinforcement for him.

Government Ends Program

As of December 31, 1947, the government program for the recruitment and transportation of workers came to an end. As a result, all migrant indigent agricultural laborers and their families will receive no more health care from the government. Although the majority of them are non-residents of the state, local doctors, hospitals or welfare agencies will again be forced to assume the burden of caring for these people unless some legislation is enacted to lift the burden from state taxpayers and professional charity. Some think that the interstate worker is a federal charge.

During the past five years certain federal agencies were very active in studying conditions among the migrant workers. The Federal Interagency Committee on Migrant Labor published a 58-page bulletin last March. On page 29 of the bulletin, this paragraph appears: "The committee is of the opinion that financial and administrative responsibility for insuring adequate health and medical facilities for migrants should rest with public health authorities—state and federal—not with employers and their seasonal workers. It, therefore, recommends that a well operated health services program for migrants be provided and that federal grants-in-aid be made to health departments to assist them in the

development of such services. Removal by the states of residence requirements as a condition for such benefits is a prerequisite."

This recommendation, if enacted into law, puts the migrant worker into a privileged position, for it absolves the seasonal worker from financial responsibility for his health care. Secondly, this recommendation takes the worker out of the Department of Agriculture health program and puts the United States Public Health Service and the state health departments into the business of administering and financing a curative medical care program for American families. On pages 45-46 of the bulletin, suggested standards for health services for labor camp occupants are set forth. At the crucial center of this suggested setup is the so-called "clinic or health center" in each camp where over a hundred migrants were housed. The physician operating this center shall give preventive and curative services and treat all cases of illness which can be handled adequately with clinics on an ambulatory basis.

Step Toward Compulsion Feared

One need not be a hysterical alarmist to see in these recommendations a pilot program which could serve as an excellent training ground for administrators of a compulsory health program for the general population. The writers and others who served on the board of directors of the MAWHA gained familiarity with this pattern of medicine because USPHS administrators constantly urged MAWHA to turn over to health departments some of the work done by private physicians and to hire doctors on an hourly basis to give service on the camps. The board stuck to its guns. The MAWHA followed suggestions of the Minnesota State Medical Association. Service was rendered by private physicians on a fee for service basis.

Organized medicine has logical grounds on which to base its suspicions of "Washington planners." Federalization of migrant health as recommended in the above quotation is not the only solution for good health service to migrants. The non-profit organization such as the MAWHA in which organized medicine and the migrant each have delegated representation on the policy-making board of directors is more likely to give the migrant health services on par with those enjoyed by the local resident than federal or state medicine could give. MAWHA medicine was identical to care received by the average Minnesotan because Minnesota physicians gave the care in Minnesota private hospitals using Minnesota methods of practice without the intrusion of a federal or state employe between patient and doctor.

The MAWHA as a corporation still exists. In the near future Minnesota physicians might be called on for a decision. The only question will be: "Does Minnesota want federal and state medicine for its migrants or does Minnesota want to give its care through the non-profit organization that has been doing it for five years?"

MAWHA THANKS MINNESOTA DOCTORS

On February 9, the following letter was received at the State Office, addressed to the physician members of the Minnesota State Medical Association:

Gentlemen:

On behalf of the board of directors of the Midwestern Agricultural Workers' Health Association and its staff, I wish to thank the State Medical Association of Minnesota and its practitioner members who gave service to the foreign and domestic migrant laborers during the past five seasons.

The Congress of the United States has terminated the foreign labor program and our contract with the United States Government ends as of December 31, 1947, although the corporate entity of the MAWHA has been preserved.

Our board of directors, consisting of four doctor-delegates from Midwestern medical societies and three laymen, resolved to keep the corporation intact because we felt that a non-profit corporation of this kind has proved its ability to operate, with the assistance of organized medicine and its practitioners, a program of health care for migrant agricultural laborers economically and efficiently through the use of rural practitioners on a fee-for-service basis, with free choice to the patient in areas where a choice of doctors is available, and with regard to the ethics and scientific principles advocated by organized medicine.

Each year your state society has given me a report on the operation of the MAWHA within your state. These reports were helpful to the board of directors and the staff in planning methods of operation.

With the termination of our contract with the government the indigent migrant worker could very well become a subject of the charity of doctors and hospitals for, by lack of residential qualifications, he is ineligible for medical relief in the communities in which he tarries for a while in the harvest season. It is entirely possible, however, that some legislation will be enacted to relieve the smaller communities of the burden of caring for ineligible workers out of local taxpayers' funds.

The Midwestern Agricultural Workers' Health Association, by keeping its corporate identity can probably offer its facilities and service to government and organized medicine alike in any program for the emergency medical relief of the indigent, or near indigent, migratory agricultural worker in areas where his pay is insufficient to meet his needs.

Very truly yours,
F. S. Crockett, M.D., *President*
Board of Directors, MAWHA

SCHEELE SUCCEEDS PARRAN AS USPHS SURGEON GENERAL

On April 6, Dr. Leonard A. Scheele, present director of the National Cancer Institute, will become surgeon general of the United States Public Health Service, succeeding Dr. Parran.

A letter from the Washington Office of the Council on Medical Service of the American Medical Association gives a brief biographical sketch of Dr. Scheele.

Born in Fort Wayne, Indiana, July 25, 1907, Dr. Scheele was educated in Michigan, receiving his M.D. in 1934 from Wayne University in Detroit. He entered the Public Health Service almost at once. He held several field positions; did cancer control work and was transferred to civilian defense. Later he was assigned to the Army and served in Sicily, Italy and Germany. He received many decorations for his foreign service.

He returned to the National Cancer Institute in 1946 and was made director in 1947. He and his wife, who is a dentist, live in Bethesda near the Institute. They have three children.

According to the Washington Office, Dr. Scheele is an intense worker, probably partial to research. Their bulletin states that he has shown outstanding ability as an administrator and is thoroughly aware of the potentialities of his new position.

Parran Aware of Replacement

Dr. Parran knew he would not be reappointed, according to the *Washington Report on the Medical Sciences,* another periodic bulletin of medical news issued from Washington. In the February 16 report, some interesting background of the present situation is given.

It seems Dr. Parran would have liked to serve another four years, but because Federal Security Administrator Ewing likes to enunciate his own health policies and Dr. Parran is himself an independent thinker, reappointment seemed unlikely. Evidently, Ewing plans big things for the formulation of President Truman's national health program. The medical science report says it will be "extremely interesting" to see what Dr. Scheele will be able to accomplish within the pattern cut out by Ewing, since Ewing has given every evidence of desiring to be his own Surgeon General by forming health policies which have formerly been the function of the head of the USPHS.

Dr. Scheele, who is forty, will be the youngest Surgeon General in his country's history, it is reported. He hasn't much seniority in the list of commissioned officers in the health service; and it appears the Dr. Parran helped name his successor, whom he says is "one of the outstanding public health figures in this country," possessing "both personal and professional qualities to be a great surgeon general."

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Minneapolis Woman Placed on Two-year Probation Term for Criminal Abortion

Re. State of Minnesota vs. Elizabeth L. Libera

On February 13, 1948, Elizabeth L. Libera, thirty-two years of age, 3551 North 4th Street, Minneapolis, was sentenced by the Hon. Arthur W. Selover, Judge of the District Court of Hennepin County, to a term of not to exceed two years in the Women's Reformatory at Shakopee. Because of the fact that there was no evidence of other abortions, Judge Selover placed the defendant on probation for two years. Mrs. Libera had previously entered a plea of guilty on January 12, 1948, to an information charging her with the crime of abortion.

Mrs. Libera was arrested on December 21, 1947, following the hospitalization of a twenty-four-year-old unmarried Minneapolis woman suffering from the after effects of a criminal abortion. The defendant performed the abortion by means of a catheter and was paid the sum of $200 for her services. The defendant stated to Judge Selover that she was married and the mother of three children. She further stated that she had never performed any other abortions except one on herself.

Minneapolis Woman Must Serve One Year for Criminal Abortion

Re. State of Minnesota vs. Lola Wilkie

On February 13, 1948, Lola Wilkie, fifty-nine years of age, 717 19th Avenue South, Minneapolis, was sentenced by the Hon. Frank E. Reed, Judge of the District Court of Hennepin County, to a term of two to eight years in the Women's Reformatory at Shakopee. The Court stayed the sentence and placed the defendant on probation for five years; Mrs. Wilkie, however, must serve the first year of the sentence in the Minneapolis Women's Detention Home. The defendant had previously pleaded guilty on December 1, 1947, to an information charging her with the crime of abortion.

Mrs. Wilkie was arrested on a complaint issued October 27, 1947, charging her with performing an abortion on an unmarried Minneapolis girl on September 7, 1947. The abortion was performed by the defendant at the home of the patient by means of a catheter. The patient became ill and was subsequently hospitalized at a Minneapolis hospital. The defendant Wilkie has a long

criminal record dating back to 1928. On October 3 of that year the defendant entered a plea of guilty in the District Court of Hennepin County to an information charging her with the crime of receiving stolen property and was sentenced to serve ninety days in the Minneapolis Workhouse. On May 22, 1945, the defendant was sentenced in the District Court of Hennepin County to serve one year in the Women's Reformatory at Shakopee following her plea of guilty on April 20, 1945, to an information charging her with the crime of abortion. The defendant served that sentence. On February 28, 1941, the defendant was indicted by the grand jury of Hennepin County for the crime of abortion, but the warrant of arrest was not served on her due to the fact that the sheriff's office was unable to locate the defendant. However, that indictment was called to the attention of the Court at the time Mrs. Wilkie was sentenced on May 22, 1945.

The defendant stated to the Court that she was born on July 7, 1888, at Necedah, Wisconsin. She stated that she became involved in doing abortions many years ago when she took care of abortion patients for a chiropractor, now deceased.

Former Masseuse Sentenced to Ramsey County Jail for Criminal Abortion

Re. State of Minnesota vs. Pauline L. Schultz

On February 16, 1948, Pauline L. Schultz, seventy-four years of age, 656 North Lexington Avenue, Saint Paul, Minnesota, was sentenced by the Hon. Gustavus Loevinger, Judge of the District Court, to a term of one year in the Ramsey County Jail. Mrs. Schultz had entered a plea of guilty on February 2, 1948, to an information charging her with the crime of abortion. Judge Loevinger stated to the defendant at the time sentence was imposed, that notwithstanding her age and the condition of her health, the defendant would not be placed on probation but would be required to serve her sentence. The Court pointed out that the investigation made by the probation officer disclosed that Mrs. Schultz had been doing abortions over a long period of time.

Mrs. Schultz was arrested on December 13, 1947, by Saint Paul Police officers following an anonymous telephone call to the Police Department advising them that a woman was having an abortion performed by the defendant Schultz. The police officers placed Mrs. Schultz' home in surveillance and discovered the abortion patient entering and leaving Mrs. Schultz' place. The patient was removed to Ancker Hospital where she disclosed that Mrs. Schultz inserted a catheter for the purpose of producing a miscarriage. The patient stated that she paid Mrs. Schultz $150 for her services. When police officers arrested Mrs. Schultz, they found $6,350 in currency in Mrs. Schultz' home. A statement was taken from Mrs. Schultz in which she admitted performing the abortion in the instant case, and also that she had performed five or six other abortions during 1947.

Mrs. Schultz, prior to 1931, was licensed as a masseuse. She also had represented herself to the public at various times as a chiropractor and as a naturopathic physician. Mrs. Schultz was acquitted by a jury in the District Court of Ramsey County in April, 1928, of the charge of abortion. In May, 1931, Mrs. Schultz was indicted by the grand jury of Ramsey County for the crime of manslaughter in the first degree, following an alleged criminal abortion. That indictment was nolled by the Court on October 26, 1931, because of the lack of sufficient evidence to connect the defendant with the crime and partially because of the failure of a Saint Paul physician to co-operate with the State in the prosecution.

Saint Paul Woman Sentenced to One-year Jail Term for Criminal Abortion

Re. State of Minnesota vs. Bessie Moulton

On February 20, 1948, Bessie Moulton, fifty-eight years of age, 188 E. 15th Street, Saint Paul, Minnesota, was sentenced by the Hon. Gustavus Loevinger, Judge of the Ramsey County District Court, to a term of one year in the County Jail. Mrs. Moulton, on January 30, 1948, had entered a plea of guilty to an information charging her with the crime of abortion. The matter was passed at that time to permit the case to be investigated by the probation officer. Following that investigation, Judge Loevinger advised the defendant that she would have to serve her sentence.

Mrs. Moulton was arrested on January 17, 1948, by Saint Paul police officers following an investigation made by the Minnesota State Board of Medical Examiners, the Minneapolis Police Department and Saint Paul police officers. That investigation disclosed that a 22-year-old Minneapolis girl had been aborted by the defendant. Following the abortion, the patient became ill and was removed to a Minneapolis hospital. The investigation further disclosed that Mrs. Moulton was paid $100 for her services and that she had performed numerous other abortions over a period of several years.

Mrs. Moulton was born at Oxford, Wisconsin, and lived in Detroit, Michigan, prior to coming to Saint Paul twenty years ago. Mrs. Moulton admitted a previous conviction for a violation of the Federal liquor laws during the days of prohibition, for which offense Mrs. Moulton served eight months in the Ramsey County Jail. Mrs. Moulton stated that she performed a few abortions in Detroit before moving to Saint Paul and that she had done some abortions in Minneapolis as well as in Saint Paul.

TREATMENT OF CONGESTIVE HEART FAILURE

(Continued from Page 266)

probably not necessary) was followed by complete disappearance of his anasarca.

Between May and December of 1947 this man was kept edema free without use of diuretics, and only returned monthly for observation. No decrease in size of his heart has been demonstrated. Vital capacity is still definitely reduced, but by following his diet rigidly, he is able to do light work and is now self-supporting.

Conclusion

Digitalis is still the most important single drug in the management of heart failure.

Diuretics relieve those congestive symptoms which may remain after digitalization.

In severe dropsy the Schemm regime is very much worthwhile.

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3. Schemm, F. R.: A high fluid intake in the management of edema, especially cardiac edema. I. The details and basis of the regime. Ann. Int. Med., 17:952-956, (Dec.) 1942; II. Clinical observation and data. Ann. Int. Med., 21:937-976, (Dec.) 1944.

Minnesota Academy of Medicine

Meeting of November 12, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, Saint Paul, on Wednesday evening, November 12, 1947. Dinner was served at 7 p.m., and the meeting was called to order at 8 p.m. by the president, Dr. E. M. Hammes.

There were fifty-four members and three guests present.

Minutes of the October meeting were read and approved.

Dr. Harold S. Diehl read the following Memorial to Dr. Robert Green and a motion was carried that this be spread on the records of the Academy and a copy sent to the family.

ROBERT G. GREEN, 1895-1947

Thirty years ago, while serving as an instructor in the Department of Bacteriology, I had as one of my assignments the teaching of a course in general bacteriology to students from the College of Agriculture. I well remember the keen interest, the enthusiasm and the outstanding performance of a student in that class by the name of Robert Green.

Last year I received from this former student a bound volume of some fifty reprints of selected scientific papers with the following inscription on the flyleaf: "It is just thirty years ago that a student asked you in the hall if you thought that it would be worth while for him to try to do a little research in bacteriology. This book is a record of what has happened so far as a result of your encouragement." It was signed Robert G. Green.

Shortly after accepting this volume, it was my privilege to recommend the appointment of Dr. Green as head of the Department of Bacteriology of the University of Minnesota. Unfortunately he served in this capacity for only a few months before his sudden death about two months ago. But even in this brief period of time his vision, his enthusiasm and his inspiring leadership had given new life to a department which only recently had suffered the loss of such distinguished scientists as Dr. Arthur Henrici and Dr. Winford Larson.

In scientific work one rarely finds an individual of the originality of mind and the research genius which Dr. Green possessed. Over the years, Dr. Green's major scientific work was in the field of viruses, but his 200 scientific papers cover a variety of subjects. Some of his early papers were on the physical chemistry of bacteria. Distemper and canine encephalitis claimed his major interest for several years, with the development of an effective vaccine against each of them. Then he described and discovered the cause of a new disease which he called Chastek paralysis. To me it has always seemed that Dr. Green's studies of tularemia and other diseases of the wildlife population are monumental contributions to our knowledge not only of these diseases but also of the course of epidemic diseases under natural conditions.

During the past few years, Dr. Green had been devoting his research interests primarily to cancer and to infantile paralysis. The members of this Academy will remember his presentation here last winter of his hypothesis as to the nature of cancer and of the investigative work which seemed to lend support to this theory. Sortly before his death Dr. Green brought to my office a series of test tubes showing precipitin tests which he believed could lead to a serological diagnosis of cancer and even to possible immunization against cancer. His work on infantile paralysis was directed toward the development of a vaccine against this disease.

To have the life of such a brilliant scientist cut off at the very peak of his career is an irreparable loss. But his achievements, which far exceeded those of most investigators in a complete lifetime, remain to serve as the stepping stones upon which further progress along these pathways will be made. And the ideas which he has planted in the minds of his students may well blossom forth into greater accomplishments even than he envisioned. Truly, it has been a privilege to have had Dr. Green as one of our group.

HAROLD S. DIEHL, M.D.

September 8, 1947

The following were elected as candidates for active membership in the Minneapolis list: Dr. Malcolm Hanson, Dr. Carl Laymon, and Dr. H. M. N. Wynne. Dr. Donald Creevy's name was transferred from the Minneapolis list to the University Faculty list.

The scientific program followed. Dr. R. M. Wilder, of the Mayo Clinic, Rochester, Minnesota, read his inaugural thesis.

SAMPLING THE NUTRITION OF MINNESOTA CHILDREN

RUSSELL M. WILDER, M.D.
Rochester, Minnesota

The achievement represented by the synthesis of a number of the vitamins is one of the many brilliant contributions to scientific medicine to which we have been witness in this century. However, the commercialization of these products has involved exaggeration and misstatement so distasteful that some scientists in medicine have acquired an actual antipathy to vitamins. Food consumption studies, especially those conducted in 1938 by the Bureau of Home Economics of the United States Department of Agriculture,[5] suggested that a

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

very large proportion of the people in this country were ill fed, and prompted a campaign to improve nutrition. Some of us believe that this campaign contributed to the waging of the war. It also added fuel, however, to feed the flame of vitamin exploitation, and in consequence of all this emphasis on vitamins a wide rift has developed between those who do and those who don't believe that vitamin deficiency is prevalent in this country. The divergence of expressions of opinion on this subject, but especially the exploitation of synthetic vitamins, has been harmful to the program to improve the public health through providing better diets. An English speaker once remarked: "The sincere friends of freedom [he could have had the same to say about the friends of better diets] have been few, and their triumphs have been due to auxiliaries whose objectives often differed from their own; and such association, which is always dangerous, has sometimes been disastrous by giving opponents just ground for opposition."

There must be a middle ground, and of course there is, one to which the conscientious student of nutrition has adhered despite the overemphasis of the vitamins on the one hand and the deaf ears of skeptics on the other. My personal attempt to pursue this middle way has been a pilgrim's progress.

Like many a physician I had been unwilling to accept estimates of the incidence of malnutrition which were based on food consumption surveys. Few patients coming to the Mayo Clinic appear to be malnourished, and for almost every case of malnutrition some reason other than the diet appears to be the explanation. Especially disturbing to me were reports some years ago that diabetes mellitus could be caused by deficiency of thiamine. I put this to the test and was almost gleeful when it could be shown that varying the intake of thiamine of severely diabetic patients was without effect on requirements for insulin. This study, made by Doctors K. A. Smith and H. L. Mason,[4] led to further investigation of thiamine deficiency. The later studies were begun by Dr. K. A. Smith, but were carried further with great elaboration by Dr. Ray D. Williams and associates.[7-11] The results upset my earlier complacency, for it was demonstrated that a thiamine intake no smaller than what the food consumption studies showed to be the thiamine content of many diets could produce a metabolic abnormality in persons who had been normal metabolically. When glucose was given to these persons, intermediates of glucose oxidation accumulated in the blood. Although lactic and pyruvic acids are found in normal blood, the amounts of them rose to abnormal levels when glucose was administered. In some persons this abnormality was accompanied by an increase in the sugar of the blood and some glycosuria. This was diabetes of a kind, but not diabetes mellitus. It was correctable by giving thiamine although not by giving insulin.

Associated with this metabolic abnormality were some psychologic and neurologic disturbances that were nonspecific and hence unimportant diagnostically, and yet were quite disabling.[6] These disabilities, like the metabolic defect, developed in the periods of thiamine deprivation but disappeared when the thiamine content of the diet was increased to levels now considered to be adequate. The studies referred to were begun in April, 1939. In that same year riboflavin deprivation was reported[3] to have caused thinning and fissuring of the epithelium of the lips (cheilosis), reddening and cracking at the angles of the mouth (angular stomatitis), a type of seborrhea in the creases at the sides of the nose (dyssebacia), congestion of the circumcorneal plexus of the conjunctiva, reddening of the tongue with changes of the papillae of the tongue, and other tissue lesions. These objective abnormalities, like the metabolic defect produced by deficiency of thiamine, were accompanied by the development of subjective disabilities, with recovery when riboflavin was restored. Likewise, at about this time, nicotinic acid, now called niacin, was found by Elvehjem[2] to be specific for the treatment of black tongue, the disease of dogs analogous to human pellagra. Niacin proved equally effective in the treatment of the lesions of the skin and tongue of patients with pellagra. Also niacin, riboflavin and thiamine, given together, in therapeutic trials were shown in several clinics to help relieve other signs and symptoms presented by persons who had been diagnosed for years as suffering either with pellagra or with pellagra without the photosensitive lesions of the neck and hands characteristic of pellagra—so-called pellagra sine pellagra.

With these discoveries clamoring for attention and with war around the corner and threatening to worsen the quality of the food supply, it would have been the height of folly in 1940 and 1941 to fail to take a stand for improvement of the nation's diet; improvement especially with respect to the vitamins which the food consumption surveys showed to be supplied in very limited amounts by many diets. The campaign started with the backing of a committee of the National Research Council composed of physicians, biochemists, physiologists and others who had special training in this field. The Food and Nutrition Board, as the committee came later to be called, was largely instrumental in securing, among other things, improvement of white flour and bread through their enrichment, increased consumption of milk, in-plant feeding arrangements for workers in war industries, and some degree of differential distribution of the food supplies.

The small part I had to play in these activities of the Food and Nutrition Board was accomplished, I must admit, with considerable uncertainty about the extent of the problem with which we had to deal. How many people really needed such attention to their diets? The Board established certain standards; we called them recommended dietary allowances for calories, protein, iron, calcium and each of several vitamins. The allowances admittedly were something more than minimal requirements. They were intended as a goal which if attained would assure that all would be well fed. It was recognized in this that individuals differ in their needs and that a minimal requirement for one would represent inadequacy for another. Now the food consumption surveys showed that many diets fell below the allowances recommended, but it was not known that this discrepancy was actually reflected in extensive failure of nutrition. Few medical surveys of nutritional

status had been made; indeed, no agreement had been reached as to what could be accepted as criteria of malnutrition.

Because of this dilemma I was very pleased to be invited to join a medical mission to study and evaluate nutritional conditions in Newfoundland. To judge from all accounts available, that was a country which undoubtedly was ill fed. Actual beriberi, actual scurvy and night blindness had been reported as occurring not infrequently in its inhabitants. What would be the incidence there of the several tissue lesions reputed to be characteristic of less severe deficiencies? The medical survey made in Newfoundland has been reported.[1] It revealed a very high incidence of the tissue lesions looked for. Unusually satisfactory colored illustrations of many of these lesions are contained in that report, together with a more complete description of the lesions than is necessary here. The survey further showed a large proportion of the population to be suffering with those vague disabilities which had been encountered in pellagra and in subjects who had been deprived experimentally of thiamine and riboflavin. The major errors in the diets of these people were deficiencies of vitamins, and I returned from Newfoundland convinced that vitamin allowances as low as those obtaining there were decidedly unhealthful. I still remained uncertain as to whether many persons in our country were similarly affected, especially in regions such as Minnesota where supplies of milk, meat, greens and citrus fruits are more abundant. I therefore welcomed a later opportunity to study groups of children in this state and to compare the incidence of tissue lesions found in them with the incidence of the lesions found in Newfoundland.

Surveys in Minnesota

The Minnesota study involved examining grade school children in each of three communities: the first the White Earth Indian Reservation, the second a rural area of Wabasha County in southeastern Minnesota, the third a district of Rochester inhabited by a population which included many of the families of my colleagues of the Mayo Clinic. In Newfoundland, vitamin assays of the blood had been obtained. The techniques for these were not available in the Minnesota study, and in any case such assays provide at most an index of the adequacy of the recent diet. Instead, in Minnesota we had food consumption data acquired by questioning the children. In Newfoundland 846 persons of all ages had been examined. Of them 402 were children of grade school ages, 193 boys and 209 girls. They alone are taken here for comparison with the Minnesota children. The Newfoundland survey was made in August, 1944. The distribution by locality of the Minnesota children, the sex in each of the three groups and the month of the year in which they were examined were as follows:

White Earth Indian Reservation, thirty-seven boys, fifty-two girls, examined in September, 1945.

Wabasha County, fifty-three boys, thirty-six girls, examined in December, 1945.

Rochester, fifty-one boys, thirty-eight girls, examined in January, 1946.

TABLE I. FOOD SUPPLY OF NEWFOUNDLAND PER CAPITA DAILY NUTRIENTS

Nutrient	Recommended Allowance*	Newfoundland Consumption	
		Quantity	Recommended Allowances Per Cent
Calories	2,544	2,997	115
Protein	66.1 gm.	88.4 gm.	134
Iron	11.8 mg.	9.5 mg.	**80**
Calcium	960 mg.	415 mg.	**43**
Vitamin A	4,590 U.S.P. units	1,443 U.S.P. units	**31**
Ascorbic acid	71.3 mg.	20 mg.	**35**
Thiamine	1.20 mg.	0.90 mg.	**75**
Riboflavin	1.60 mg.	1.03 mg.	**65**
Niacin	12.0 mg.	15.0 mg.	125

*Revised 1945; weighted allowances per capita.

The children were taken without selection and in each group were fairly equally distributed between the ages six to fourteen years.

Food Consumption Data

Newfoundland.—The major part of the food supply of Newfoundland was imported. The local food production comprised a very small amount of meat, eggs and milk, a large catch of fish, mainly cod which were eaten dried, and a small yield of garden products, consisting for the most part of potatoes, cabbages and turnips. From this data we could estimate that the caloric allowance was adequate, that the protein allowance was adequate, but that the average diet was far below the recommended allowances with respect to calcium and the vitamins (Table I).

Some doubt attaches to the figures given for the adequacy of niacin. In diets lacking milk and meat, except for the dry codfish which constituted the principal source of animal protein in Newfoundland, the requirement for niacin may be considerably higher than that which is called for in the recommended dietary allowances.

The reliability of these estimates was supported by the finding of high values for serum protein and reasonably good values for blood hemoglobin in all but a very small percentage of the 370 persons whose blood was examined, and by low blood values for ascorbic acid, vitamin A and riboflavin in more than half the persons. Small excretions of thiamine in the urine suggested that the intake of thiamine was less than adequate in 40 per cent of the population.

White Earth.—The dietary habits of the children on the Indian Reservation were studied by Miss Irene Netz, nutritionist of the State Relief Agency. The contribution to the total calories made by flour, sugar and fat was very large, and although the consumption of potatoes was also large, that of meat and of green or yellow vegetables and milk was small. The large majority of the children received a lunch at school, but even so, the average intake, although probably superior to that in Newfoundland, was certainly inadequate in several nutrients. The diets appeared to be satisfactory with respect to calories, less so with respect to animal protein, but definitely low in calcium and low in vitamins.

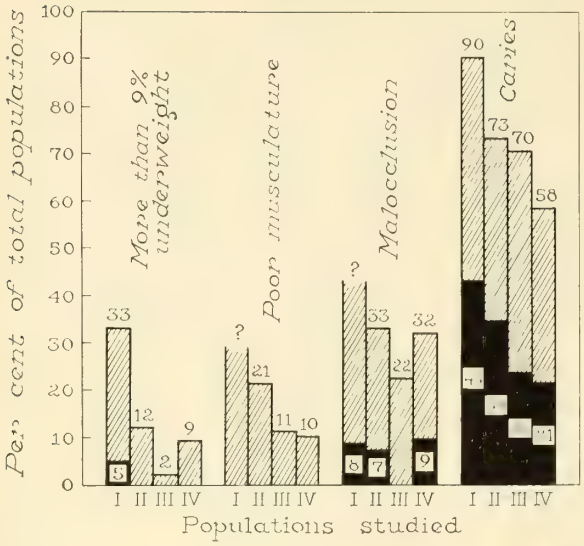


Fig. 1. Incidence of abnormalities observed in children of (I) Newfoundland, (II) White Earth, (III) Wabasha County and (IV) Rochester. Solid black indicates incidence of lesions of severity.

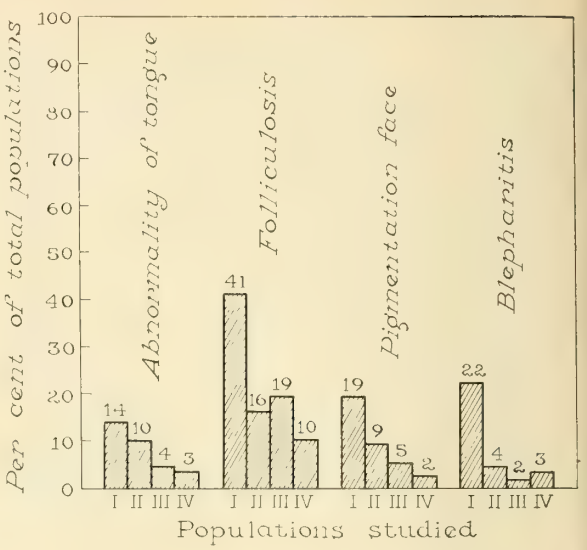


Fig. 2. Incidence of abnormalities observed in children of (I) Newfoundland, (II) White Earth, (III) Wabasha County and (IV) Rochester.

Wabasha County.—The diets of the children in the Wabasha County schools was regarded by Miss Netz as fairly typical for the children of southeastern rural Minnesota. A tenth of the children used no milk, a fourth used less than one serving daily of meat, fish or poultry, a half used no citrus fruit and only 60 per cent obtained a satisfactory amount of fresh vegetables. Bread, sugar and sweetened foods contributed excessively to the total calories. School meals had not been served. The diets of many of these children, although ample with respect to calories and protein, provided considerably less than the recommended allowances of calcium and the vitamins.

Rochester.—The diets of the Rochester children were certainly superior on the whole to those of the children of rural Wabasha County. Nevertheless, many of these diets could have been improved, and about 10 per cent were clearly less than what is recommended with respect to fruits, vegetables and milk. School meals were not provided.

Here are four groups of children for comparison. In every group the diets are adequate with respect to calories and probably with few exceptions adequate with respect to protein and iron. The difference between the diets of the groups is in respect to calcium and the vitamins provided, with the incidence of inadequate diets unquestionably greatest in Newfoundland, least in Rochester.

Findings on Examination

The examination of the children was limited in each instance to measurement of height and weight, to palpation of the muscle and inspection of the skin of the arms and legs and to inspection of the face, the scalp, the conjunctiva, the lips, the gums, the teeth and the tongue. No instruments were used other than a hand slit lamp, a dental probe with a flattened tip and a tuning fork.

Height.—There were no striking differences in stature. The heights even of the children in Newfoundland, where the incidence of poor diets unquestionably was highest, showed very close conformance to the Baldwin-Wood standards for children of the ages represented. Deficiencies of calcium and vitamins of the degrees encountered in these populations are apparently without effect on skeletal growth, this being strikingly in contrast to what is regularly reported from regions where protein and calories are lacking.

Weight.—Body weights for age and height differed strikingly. The incidence of children 10 or more per cent below the average standard weight for height and age was 33 per cent in Newfoundland, 12.4 per cent in White Earth, 2 per cent in Wabasha County and 9 per cent in Rochester (Fig. 1).

Poor Musculature.—Poorly developed musculature was conspicuous in the majority of the children of the Newfoundland group. Among the White Earth children poor musculature was observed in 21 per cent, whereas in Wabasha County and Rochester the incidence was 11 per cent and 10 per cent, respectively (Fig. 1).

Malocclusion of the Teeth.—No record was made of the incidence of malocclusion of the teeth in Newfoundland. It is my recollection that it was very high. The incidence of this abnormality in White Earth, Wabasha County and Rochester was 33, 22 and 32 per cent, respectively (Fig. 1).

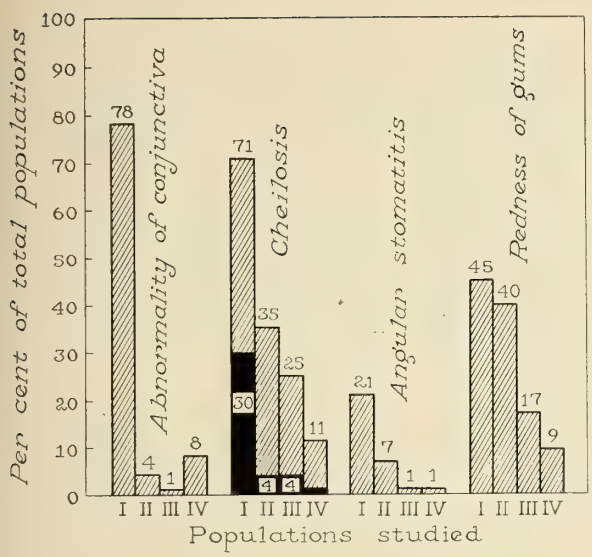


Fig. 3. Incidence of abnormalities observed in children of (I) Newfoundland, (II) White Earth, (III) Wabasha County and (IV) Rochester. Solid black indicates incidence of lesions of severity.

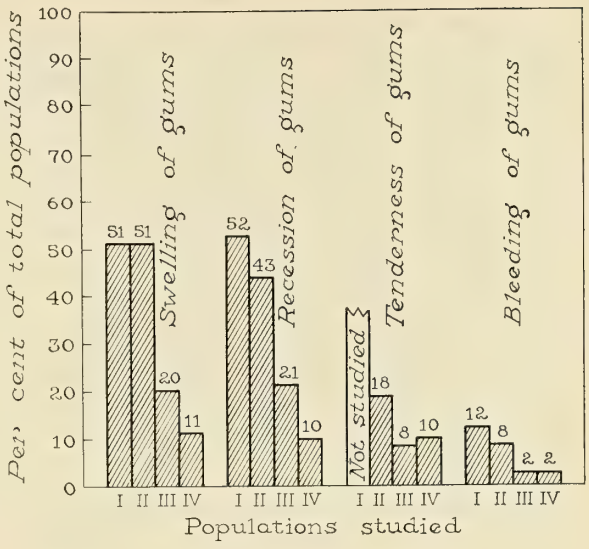


Fig. 4. Incidence of abnormalities observed in children of (I) Newfoundland, (II) White Earth, (III) Wabasha County and (IV) Rochester.

Dental Caries.—The incidence of dental caries of all degrees was 90 per cent in Newfoundland, 73 per cent in White Earth, 70 per cent in Wabasha County and 58 per cent in Rochester. The incidence of caries affecting four or more teeth was 43 per cent in Newfoundland, 34 per cent in White Earth, 23 per cent in Wabasha County and 21 per cent in Rochester (Fig. 1).

Folliculosis of the Skin of the Arms and Legs.—The incidence of the lesion of the skin variously designated as permanent gooseflesh, or folliculosis, or keratosis pilaris was 41 per cent in Newfoundland, 16 per cent at White Earth, 12 per cent in Wabasha County and 10 per cent in Rochester. It is difficult to ascribe this fourfold difference to heredity. The lesion is more conspicuous in the winter season, but the survey in Newfoundland was made in August and that in Rochester in January (Fig. 2).

Pigmentation of the Face.—This abnormality is encountered in caloric deprivation. It also is observed in deficiencies of vitamins. The caloric supplies were adequate in these children and yet the incidence of suborbital and circumoral pigmentation was 19 per cent in Newfoundland, 9 per cent in White Earth, 5 per cent in Wabasha County and 2 per cent in Rochester (Fig. 2).

Blepharitis.—Swelling and redness of the eyelids was noted in 22 per cent of the Newfoundland children. The incidence of this lesion was inconspicuous in all three groups of Minnesota children (Fig. 2).

Abnormality of the Tongue.—The incidence of increased redness of the tongue with various degrees of abnormality of its papillae was 14 per cent in Newfoundland, 10 per cent in White Earth, 4 per cent in Wabasha County and 3 per cent in Rochester (Fig. 2).

Conjunctival Abnormality.—The incidence of loss of luster and thickening of the conjunctiva was very high in Newfoundland, but low in all three of the groups of Minnesota children (Fig. 3).

Cheilosis.—Reddening, thinning, scaling and chapping of the epithelium of the lips was present in 71 per cent of the Newfoundland children and in 35 per cent of the children at White Earth. The incidence in Wabasha County and Rochester was 25 per cent and 11 per cent, respectively (Fig. 3).

Angular Stomatitis.—Various combinations of erythema and open fissuring at the angles of the mouth have been observed when deficiency of riboflavin was severe. Such lesions appeared in 21 per cent of the children in Newfoundland, in 7 per cent of those at White Earth and in 1 per cent of those in Wabasha County and Rochester (Fig. 3).

Gingivitis.—Redness, swelling and recession of the gums with or without unusual tenderness or bleeding was noted in about half of all the children in Newfoundland and White Earth, in about a fifth of the children of Wabasha County and in a tenth of those in Rochester (Fig. 3 and Fig. 4).

Concluding Comments

Several other abnormalities were observed in these several groups of children, but the point of interest is that the incidence of many of the tissue lesions mentioned descends progressively from Newfoundland to Rochester in inverse correlation to the incidence of poor diets. The fact is evidence of the strongest kind for the validity of considering these lesions to be signs or stigmas of inadequate nutrition. No one of them is

sufficiently specific to be conclusive evidence of nutritional deficiency and therefore none of them alone is diagnostic when applied to the examination of an individual. Applied to patients in a hospital, no one of them is very helpful as a measure of the adequacy of the diet, because among the sick many other abnormalities may affect nutrition. Applied, however, to groups or samples of a "nonsick" population, they do have meaning as an index of the adequacy of the diet. This may be accepted as a conclusion.

The incidence of several of the lesions mentioned was low in rural Wabasha County and very low in urban Rochester. However, the finding of an incidence for folliculosis, cheilosis and gingivitis of 20 to 25 per cent in Wabasha County and 10 per cent in Rochester, with poor musculature noted in approximately the same percentage of these children, leaves little ground for complacency about the adequacy of the diets of many of our Minnesota children; for such lesions, although relatively harmless in themselves, are accompanied not uncommonly, in Minnesota as in Newfoundland, by depression of the vigor of the mind and body, which represents depression of the quality of life.

It is not to be inferred from these conclusions that the problem can be solved by administering synthetic vitamins. Such products have a place in therapeutics. They also may be used with great advantage to improve the quality of certain foods, notably white bread. The great need, however, is for improving eating habits, which implies more emphasis on protective foods, adequate consumption of milk, eggs, meat, green and yellow vegetables, tomatoes and citrus fruits. The most effective way to accomplish such improvement is with school meals. The food habits of adults are fixed and difficult to change, and the results obtained by adult education have been discouraging. Unfortunately, the school lunch program is progressing much too slowly. In many schools no meals are served, and in schools where school lunches are established, the food selection is not always what it ought to be. If the school meal could provide not less than half the recommended allowances of protein, calcium, iron and the vitamins as a supplement to what the child obtained at home, and if the serving of each meal were made an occasion for demonstrating good food selection, we would witness very soon the end of malnutrition. For not only would the child be benefited, but the lesson and the habits formed would be carried to the homes these children soon will set up for themselves.

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Discussion

Dr. E. F. Robb, Minneapolis: Children in Minnesota are probably more fortunate than children in any other state. Here, we do have an abundance of milk and eggs. It would be interesting to see how statistics on children in other parts of the country would compare with the statistics Dr. Wilder has given us tonight.

We all know that our boys are much larger than we are, and for this there may be an explanation. Many of us had little milk, oranges, et cetera, as youngsters. Oranges were largely a special treat at Christmas time.

Last fall a number of pediatricians were here from all over the world and I had an interesting conversation with one from Holland. He is the father of three children, and he stated that during the German occupation of Holland his children remained quite well, although they did not grow to any appreciable extent. He felt that since they had an ample supply of synthetic vitamins, their health had remained good, even though their caloric intake was insufficient to promote growth. There is no doubt that we would need fewer synthetic vitamins if we could be sure that everyone had proper diets. Since this is a very difficult goal to attain, it seems wise to continue the use of the various vitamin products that are commonly used.

I would like to have Dr. Wilder tell us a bit more about the cases he saw with bleeding gums. It is my impression that large doses of vitamin C are very helpful in cases of stomatitis and gingivitis. His observations on dental caries are also of great interest and may force us to change our ideas concerning this condition. All in all, I am sure that Dr. Wilder has given us a great deal to think about and that all of us have enjoyed this paper very much indeed.

Dr. R. T. La Vake, Minneapolis: Were any of these children put on vitamins and did you see any change in their condition?

Dr. S. Marx White, Minneapolis: I would like to know whether Dr. Wilder has any information or data he could supplement this with, as to our modern processing of foods—freezing, storage and canning—and whether such processing is known to play any part in deficiencies such as our own in Minnesota?

Dr. J. A. Lepak, St. Paul: Dr. Wilder has given us an excellent description of the lesions caused by vitamin deficiencies. The indiscriminate prescription of vitamins is unwise, I suppose, not only because it largely exploits the public and enriches those who produce them, but also because they may produce deleterious effects if taken in excessive dosage. I would like to ask Dr. Wilder if he has any data on hand to show the effects of overdosage in vitamins A and D, riboflavin, thiamine hydrochloride, niacin, et cetera? What would be the ill-effects of giving too large doses of one or more of these vitamins?

Dr. Vernon L. Hart, Minneapolis: I would like to know if the brownish transverse bands that seemed to be so common on the teeth were of any significance?

Dr. Henry L. Taylor, Minneapolis: I would like to know how these lusterless eyeballs differ from those in our malnourished population?

Dr. Wilder, in closing: I deplore as much as anyone the current indiscriminate use of pharmaceutical vitamins. I likewise deplore the fact that the active interest in nutrition occasioned by the war provided ammunition to exploiters of the vitamins. The bad accompanies the good always; nevertheless, to aim dietetically at the recommended allowances of the Food and Nutrition Board is certainly justifiable.

None of the children of the groups investigated were treated with pharmaceutical vitamins. However, in Newfoundland, by government regulation, all white flour imported was to be enriched, beginning about the time of our departure. This has resulted in a considerable increase in the intake of riboflavin, thiamine and niacin. We hope to visit Newfoundland again next year to observe the effects of this on the incidence of those tissue lesions commonly attributed to an inadequate intake of any of these vitamins. Nothing will have been done about the supply of vitamin C, and if we observe improvement of lips, tongue or conjunctiva and no change in the incidence of lesions of the gums, the improvement with reasonable assurance can be credited to the enrichment of the flour.

In line with this are observations of Jolliffe at the Bellevue Hospital in New York City. There, since enrichment of white bread and white flour was introduced, the incidence of lesions attributed to deficiency of riboflavin and niacin has markedly diminished. Also polyneuritis, which formerly was very common on the wards for alcoholics, has almost disappeared. That this improvement is related to enrichment of the bread and not to the increased purchasing power occasioned by the war is evidenced by the fact that the incidence of lesions attributed to inadequate intake of vitamin C has not decreased.

The Minnesota children were not put on vitamins, but from Florida comes a recent report of a similar study with observation of striking benefit from the institution of a satisfactory school lunch program which was supplemented for the first year with synthetic vitamins. The vitamins were given to those who appeared to be in need of them. That is, they were used as therapeutic agents, to which use one cannot take exception.

The question was asked whether various commercial practices for processing foods affect their vitamin contents. From what I have learned, as a member of the Council on Foods and Nutrition of the American Medical Association, the answer is that modern methods of canning do a very good job of preserving the vitamins and minerals of foods. Even the highly perishable vitamin C of citrus fruits is well preserved. With frozen foods there is little loss of anything. The principal vitamin loss occasioned by food processing resulted from the milling of wheat to make white flour. Enrichment of white flour has restored the content of thiamine, niacin and iron and has added riboflavin. It is to be hoped that enrichment of bread and flour can be made universal by legislation. Legislation also is desirable to assure the universal fortification of margarine with vitamin A and the universal fortification of table salt with iodine. No large section of the country is free from simple goiter, and such goiters are preventable with use of iodine. Recent surveys have revealed much adolescent goiter in regions which heretofore were considered to be goiterless.

Except in the case of vitamin D there is no good evidence of harm resulting from overdosage of any of the vitamins, and certainly there can be no danger of overdosage of vitamins from consuming food. Arctic explorers have developed ill-effects from eating the liver of polar bear which is said to be exceedingly rich in vitamin A, but few of us are likely to indulge excessively in polar bear liver.

There was little tooth brushing done in Newfoundland, which probably explains the brownish discoloration of some of the teeth shown in the lantern slides. I have no data on the fluoride content of the water in Newfoundland, but from the fact that the soil is very shallow and the underlying rock is largely igneous, I would guess its content of salts of all kinds to be low. I have heard that the fluoride contents of the drinking waters of Minnesota also are low. This may not be true, and before attributing the difference in the incidence of caries to the difference in the diets of Newfoundland and Minnesota, we ought to know about the fluoride of the waters used.

The lusterless ocular conjunctiva observed in Newfoundland was so much like that observed in the subjects of the experiment on semistarvation to which Dr. Taylor referred that when I saw those subjects I was led to suspect deficiency of vitamin A. The brownish pigmentation of the skin of the face observed in many of those subjects was also seen in Newfoundland, where the calories were sufficient but the supply of several vitamins was inadequate.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary*

SILLIMAN'S VISIT TO MINNESOTA

(Continued from Page 293)

The Falls are of very inconsiderable elevation; it appeared to us about 20 feet—Dr. Owen writes 16 feet (Owens survey)—probably the height may vary with different stages of the water. It has but a very faint resemblance to Niagara where the water falls 150 feet on the British side and 164 on the American. Still the effect is grand. As at Niagara, the river is divided by an island, forming two branches, but united into one flood both above and below.

Above the island, the river at a medium stage of the water, as at the time of our visit, is fordable by horses and carriages and some people of our party crossed in that way. We regretted that we had not known that fording was practicable as it would have saved us a perilous passage on foot over a miserable apology for a bridge—a series of planks of no great width or strength, very imperfectly secured at the contiguous ends tempted us to pass as many others had done. There was no hand rail, except that for a short distance there was a dangerous substitute in a few narrow slips of boards imperfectly secured by nails. The violent rush of the torrent beneath the planks was in some places terrific and might cause some persons who have not steady nerves to become dizzy and fall. I led Sarah [his wife] with a firm grasp of a strong hand—but on our return she became faint and dizzy. I begged her to look up and not at the water; still I was very anxious and was relieved when Governor ? of one of the western states, a gentleman of noble person and bearing, took the lady's spare hand and we were soon safe over the flood, much to our relief. A suspension bridge now renders the passage safe. . . . We had to regret that we were not aware that we were in the near vicinity of the little cataract [Minnehaha Falls] called by the Aborigines the laughing water and which gave origin to Longfellow's pleasant poem of Hiawatha so remarkable for the skilful interweaving of Indian names into harmonious verses.

—Remarks by John F. Fulton, M.D., Sterling Professor of Physiology, Yale University School of Medicine, in address before the Ramsey County Medical Society, September 23, 1947.

Reports and Announcements

INTERNATIONAL POLIOMYELITIS CONFERENCE

The first International Poliomyelitis Conference, to be held at the Waldorf Astoria Hotel in New York, July 12 to 17, has been called by the National Foundation for infantile Paralysis, with the co-operation of numerous national scientific organizations and government agencies. Addresses by leading world authorities on poliomyelitis will cover all phases of the subject, including research and treatment. The purpose of the conference will be to pool world knowledge about the disease and to expedite distribution of this knowledge on a world-wide basis.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION

The National Gastroenterological Association will hold its thirteenth scientific session at the Hotel Pennsylvania in New York City, June 7-10, 1948.

In response to popular request, the program this year will again for the most part consist of symposia, and there will be one panel discussion.

The program for the first three days will be at the Hotel Pennsylvania and will consist of symposia on gastroduodenal ulcer; ulcerative colitis; jaundice and metabolism, nutrition and allergy. The panel discussion, which will be followed by a "question and answer" period, will cover the topics of diabetic, tubercular, psychosomatic and cardiac manifestations in gastrointestinal diseases.

The fourth day of the session will be devoted to a clinical day at co-operating hospitals in New York City.

At the annual banquet to be held on Tuesday evening, June 8, the winner of the National Gastroenterological Association's 1948 cash prize award contest for the best unpublished contribution on gastroenterology or an allied subject, will receive the prize of $100.00 and a certificate of merit.

Further details and a copy of the program may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broadway, New York 23, New York.

SOCIETY OF AMERICAN BACTERIOLOGISTS

The annual meeting of the Society of American Bacteriologists will be held in Minneapolis May 10 through 14, with headquarters at the Nicollet Hotel. Among other sessions, there will be those on medical bacteriology, immunology and comparative pathology.

E. STARR JUDD LECTURE

The fifteenth E. Starr Judd lecture will be given by Dr. Alfred W. Adson, professor of neurosurgery at the Mayo Foundation, on April 29 at 8:15 p.m. in the auditorium of the University of Minnesota Museum of Natural History. Dr. Adson's subject will be "The Evolution of Neurosurgery."

The late Dr. E. Starr Judd, an alumnus of the University of Minnesota Medical School, established this annual lectureship in surgery a few years before his death.

MINNESOTA DIVISION AMERICAN CANCER SOCIETY

Dr. Arthur H. Wells, head of the Department of Pathology, St. Luke's Hospital, Duluth, was elected president of the Minnesota Division of the American Cancer Society at a meeting of the board of directors in Saint Paul on February 11. Dr. Wells succeeds the late Dr. William A. O'Brien, who had been president of the society for eight years at the time of his death in December.

Among other officers named by the board of directors was Dr. John J. Bittner, of the University of Minnesota, who was elected second vice president.

HENNEPIN COUNTY SOCIETY

Recently elected president of the Hennepin County Medical Society is Dr. Edward Dyer Anderson, Minneapolis, who will take office in October, succeeding Dr. Ralph H. Creighton.

Other officers of the society will be Dr. Robert F. McGandy and Dr. Karl W. Anderson, first and second vice presidents, respectively. Newly elected as board members are Dr. Russell W. Morse and Dr. Leo G. Rigler, board of directors; Dr. James A. Johnson and Dr. Erling S. Platou, board of censors; Dr. George N. Aagaard and Dr. Chauncey A. McKinlay, board of ethics, and Dr. Thomas J. Kinsella and Dr. T. A. Peppard, board of trustees. Named as delegates to the state association are Dr. Kinsella, Dr. Claude J. Ehrenberg, Dr. Douglas P. Head, Dr. Reuben A. Johnson, and Dr. Walter H. Ude.

WASECA COUNTY SOCIETY

At the annual meeting of the Waseca County Medical Society, held in Waseca early in January, Dr. R. C. Hottinger, Janesville, was elected to the office of president to succeed Dr. G. H. Olds, new Richland.

Also elected was Dr. S. C. G. Oeljen, Waseca, vice president, succeeding Dr. J. M. McIntire, Waseca, while Dr. C. T. Wald, Janesville, was named to replace Dr. Oeljen as secretary-treasurer.

The need for expansion of the Waseca Memorial Hospital was discussed, and use of a mobile x-ray unit for a country-wide survey was approved.

WASHINGTON COUNTY SOCIETY

At the January meeting of the Washington County Medical Society, held in Stillwater on January 13, Dr. Robert W. Holmen, Saint Paul, was the principal speaker, discussing the subject, "Allergy."

When the society met in Stillwater on February 10, Dr. Karl H. Pfuetze, of Mineral Springs Sanatorium, demonstrated the reading of eighty-two chest x-ray films taken of Stillwater high school students on November 4, 1947.

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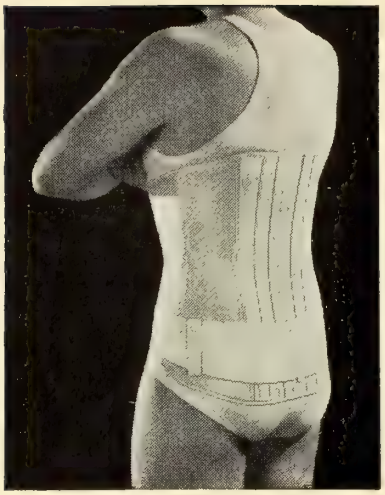
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*Dolkart, R. E.; Dentler, M., and Barrow, L. L.: The Effect of Various Types of Therapy in the Management of the Irritable Bowel Syndrome, Illinois M. J. *90*:287 (Nov.) 1946.

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*Barr, Joseph S., *Ruptured Intervertebral Disc and Sciatic Pain*, Jr. Bone and Joint Surg., 29: 429-437 (April) 1947.

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WOMAN'S AUXILIARY

Hennepin County

The Woman's Auxiliary to the Hennepin County Medical Society held its annual open meeting and health education program on Friday, March 5, 1948, at 1:30 p.m. in the auditorium of the Minneapolis Institute of Arts. Invitations were extended to representatives of women's clubs engaged in civic, philanthropic, health and educational work, and to the officers and committee chairmen of the Woman's Auxiliary to the Minnesota State Medical Association, as well as the county presidents. The speakers were graciously introduced to the members and their guests by Dr. Ralph H. Creighton, president of Hennepin County Medical Society. Dr. Richard R. Cranmer spoke on "Prepaid Medical Service," and Dr. H. N. Wright, Associate Professor of Pharmacology at the University of Minnesota, spoke on "New Drugs."

Following the lectures, tea was served in the upstairs galleries. Among the guests were Mrs. Julius Busher and Mrs. T. N. Fleming of St. Cloud, Mrs. J. L. Benepe, Mrs. H. H. Fesler and Mrs. Wm. Von der Weyer of Saint Paul and Mrs. Hobart M. Johnson of Mankato.

St. Louis County

Members of the Woman's Auxiliary to the St. Louis County Medical Society entertained their husbands at an annual dinner dance on Saturday evening, January 31, at the Kitchi Gammi Club, Duluth. Mrs. J. A. Thabes, State President, was a guest at the regular January meeting.

The February meeting of the Auxiliary was held February 10 at the Duluth Woman's Club. Luncheon was at 1 P.M. At this meeting Mrs. C. L. Thomas gave a review of "The Bishop's Mantle" by Agnes Turnbull.

Southwestern Minnesota

The Southwestern Medical Society, its Auxiliary and District Unit No. 5 of the Minnesota Department of Health sponsored an all-day "Health Day" at the Worthington Armory, Worthington, Monday, February 23. "Community Health Problems" was the subject of the morning session. Dr. Gaylord W. Anderson, Mayo professor and director of the School of Public Health, University of Minnesota, was the chairman. Participants were Mrs. J. S. Jones, Executive Secretary of the Minnesota Farm Bureau, and Mrs. Harold Wahlquist of Minneapolis, national Public Relations Chairman.

A panel discussion on "Home Safety" was conducted in the afternoon by Dr. Robt. N. Barr of the Minnesota Department of Health. "Safety on the Farm" was also discussed at this meeting. Dr. Dale B. Harris, acting director of the Institute of Child Welfare, University of Minnesota, conducted a panel dealing with the "Behavior problems in children" and other aspects of mental health. Winners of a "Nutrition and Farm and Home Safety" poster contest were introduced in the evening. Governor Luther W. Youngdahl was the principal speaker of the evening. This "Health Day" is the first of its kind in Minnesota.

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Not very many years ago, having your appendix out might have meant a fairly long and uncomfortable hospital sojourn, followed by several tedious weeks of getting back your strength. And with it all you might have had good reason to fear such complications as peritonitis or pneumonia.

Nowadays, except for a few rare cases, the removal of an appendix is not considered a serious operation. And many operations which were considered of major seriousness as recently as 1930 are now often relatively simple.

Because of notable advances in training and surgical skill, many of the risks have been almost eliminated. Complications following operations are far less common. And most patients recover in a shorter time, and with less discomfort than formerly.

Such progress in surgery has been hastened by significant developments in four important fields.

1. Anesthesia. The administration of anesthetics has become a specialized science. New anesthetics have been developed—less toxic, less upsetting to respiration and heart action. With modern anesthesia the patient has a far easier time when undergoing surgery. Post-operative nausea and vomiting, which were previously almost taken for granted, are now much less frequent.

2. Infection-fighting drugs. Peritonitis, once feared as a frequent complication of abdominal surgery, today is uncommon. The use of such agents as the sulfa drugs and penicillin—to treat infection or to guard against it—has almost eliminated many of the infections which formerly constituted the greatest dangers in surgical procedures.

3. Early ambulation. Doctors have found that getting patients out of bed soon after operations not only speeds recovery, but also prevents many of the discomforts formerly suffered. Bowel and urinary functions are quickly restored. Gas pains are usually avoided. It is not unusual nowadays for a patient to be well enough to go home from the hospital in less than ten days after a major operation.

4. Body Nutrition. One of the problems in surgery has been that the condition which makes an operation necessary is usually one which has depleted the patient's nutritional reserves, and therefore lessens his ability to recover promptly from the operation itself.

In recent years, however, medical science has broadened its knowledge of body nutrition.

Today, it is possible to determine in what a patient's body is deficient—whether he needs whole blood, vitamins, salts, carbohydrates, protein.

Each of these elements can be replaced—making it far easier for the patient to go through an operation. Post-operatively, also, recovery is hastened by supplying the body's needs in easily assimilated form.

SEE YOUR DOCTOR. Give him your complete confidence at all times. If he advises an operation, follow his recommendation promptly. With modern surgery, with modern hospital care, you have little reason to be afraid.

Remember, too, that when surgery is indicated, a delay may be dangerous. Prompt action is likely to give you a quicker recovery—and an easier one!

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In Memoriam

CHARLES P. ALING

Dr. Charles P. Aling, for more than forty years a member of the staff of St. Barnabas Hospital in Minneapolis, died January 16, 1948, at the age of sixty-nine.

Dr. Aling was born near Blue Earth, Minnesota, in 1878. He graduated from Rush Medical School in 1900 and practiced at Marine-on-St. Croix, for three years before locating in Minneapolis.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

Dr. Aling is survived by his wife, Genevieve; a daughter, Mrs. Adrian Kennison of Plainfield, New Jersey, and a son, Dr. Charles A. Aling of Minneapolis.

HERMAN A. FASSBENDER

Dr. Herman A. Fassbender, mayor of Hastings, Minnesota, died January 7, 1948, after a year's illness.

Dr. Fassbender was born in Hastings, January 20, 1894. He obtained his medical degree from the University of Minnesota in 1920 and for the past eighteen years has maintained St. Raphael's hospital in Hastings. He was a councilman for four years and mayor for the two-year terms of 1935-1936, 1940-1941 and 1946-1947.

Dr. Fassbender is survived by his wife, three sons, Dr. William of Alma, Wisconsin, Dr. Herman T. at St. Louis University and David of Hastings and two daughters, Mary Margaret and Eileen.

FRED WILLIAM GAARDE

Dr. Fred W. Gaarde, since 1920 an internist in the Mayo Clinic, died February 10, 1948, following a long illness.

Dr. Gaarde was born June 20, 1887, at Minden, Nebraska. He obtained a B.S. degree from the University of Chicago in 1909 and his M.D. from Rush Medical School in 1912. Interning first at the Akron City Hospital for six months, he spent the following eighteen months at the Presbyterian Hospital in Chicago. He then became associated with Dr. Frank Billings in Chicago and practiced there from 1913 until he entered the army in 1918. After serving overseas, he was discharged as a major in 1926.

In 1920, Dr. Gaarde became connected with the Mayo Clinic, becoming head of a section in medicine in 1926. At the time of his death, he was a Senior Consultant in Medicine and Assistant Professor of Medicine at the Mayo Foundation.

He was a fellow of the American College of Physicians, a member of the Chicago Society of Internal Medicine, the Central Society for Chemical Research, the Minnesota Society of Internal Medicine, the Olmsted-Houston-Fillmore County Medical Society and the Minnesota State and American Medical Associations.

On May 20, 1915, Dr. Gaarde married Hazel Holman. She and two sons, Dr. Fred Gaarde, Jr., of Rochester and Richard Gaarde, who is with the Naval Air Corps in Trinidad, his mother, Mrs. Anna Klith Gaarde and a brother John of Hastings, Nebraska, survive him.

VERNER G. HESELTINE

Dr. Verner G. Heseltine, well-known physician of Taylors Falls, Minnesota, passed away December 8, 1947. He was seventy-two years old.

A native of Australia, Dr. Heseltine was born in Adelaide, South Australia. He went to England at the age of nineteen and graduated from St. Bartholomew's Hospital Medical School. He practiced at the Rotunda Hospital, Dublin, before coming to Taylors Falls thirty years ago.

Dr. Heseltine had been a member of the Ramsey, Chicago-Pine and East Central County Medical Societies, the Minnesota State and American Medical Associations. He was also a member of the Royal College of Surgeons.

Dr. Heseltine's wife, the former Jessica O'Brien, died four years ago. He is survived by two daughters, Mrs. Kenneth Pepper and Mrs. Ben Bezina of Taylors Falls, and two brothers who live in Australia.

PAUL HAROLD KELLY

Dr. Paul H. Kelly, well known as a surgeon in Saint Paul for the past thirty-six years, died suddenly at the age of sixty-three at St. Josph's Hospital on January 9, 1948.

The youngest of eight children, Dr. Kelly was born on October 5, 1884, the son of the late Daniel W. Kelly and Mary Collins Kelly. By a strange coincidence his death took place in the same hospital in which he was born.

He attended the Saint Paul grade schools, Cretin and Central High Schools and Hamline University for a year. He received a degree as pharmaceutical chemist in 1904 and his M.D. in 1911, both from the University of Minnesota. During the later years of his medical training, he lived at St. Joseph's Hospital in the capacity of an extern. During this time, he also acted when called upon as relief for the police surgeon at night.

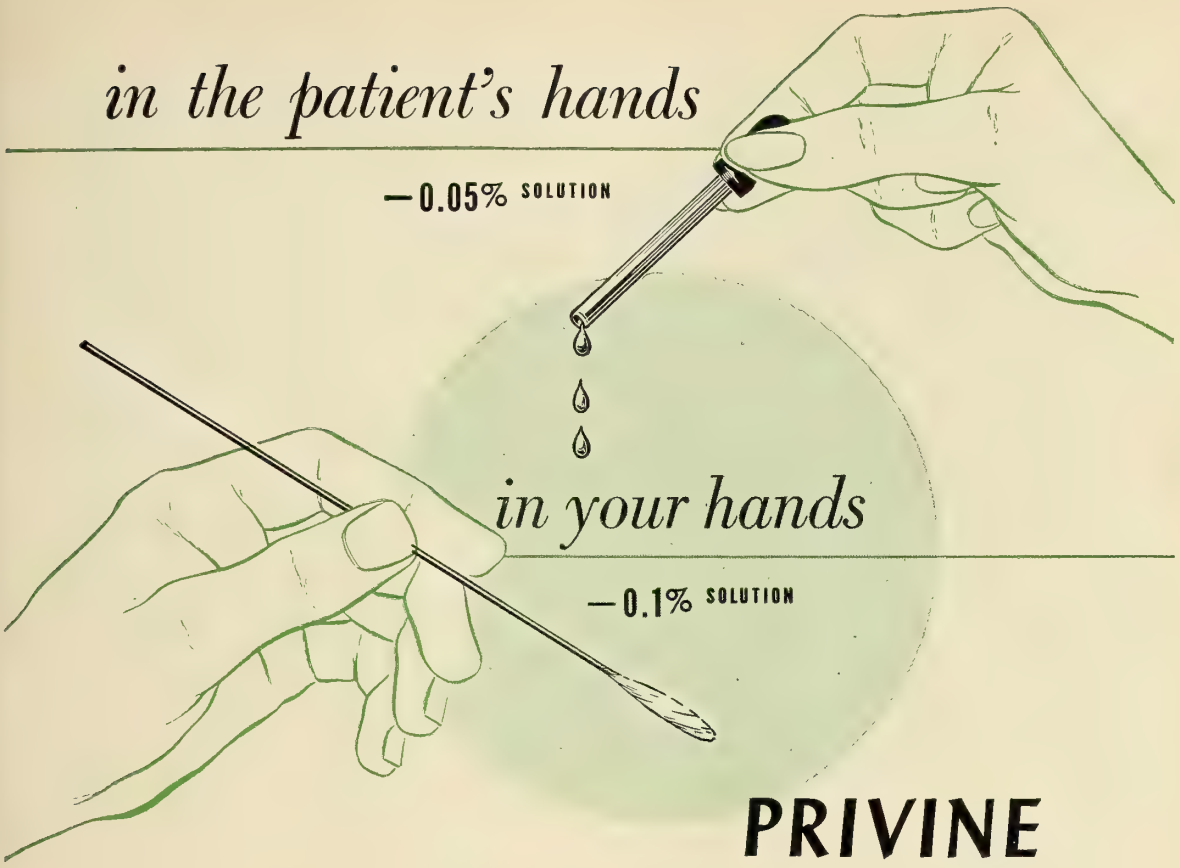
After graduation in 1911, Dr. Kelly interned at Ancker Hospital, then known as the City and County Hospital in Saint Paul, was city physician from 1912 to 1914, and a member of the surgical staff of Ancker Hospital from 1912 to 1928. He was also a member of the staffs of St. Joseph's, Miller, St. Lukes, Midway and St. John's Hospital. He was a member of the advisory board of St. Joseph's Hospital from 1934 to 1939 and the chief of staff in 1939.

Dr. Kelly was a member of the Ramsey County Medi-

(Continued on Page 312)

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PAUL HAROLD KELLY

(Continued from Page 310)

cal Society, the Minnesota State and American Medical Associations, a Fellow of the American College of Surgeons and a member of the American Association of Railroad Surgeons. In recent years, he was local surgeon for the Chicago, Milwaukee and Saint Paul and the Chicago, Great Western railways.

Dr. Kelly was one of the first surgeons in Saint Paul to specialize in industrial surgery, and as a result of his experience, his advice and counsel were frequently sought. He published several articles in MINNESOTA MEDICINE: one in 1922 entitled "Strangulated Hernia—Report of Cases"; his part in a Symposium on Emergency Surgery held at the 1933 meeting of the Minnesota State Medical Association, and in 1934 an article entitled "Industrial Accidents—A Report of 2,000 Cases."

Dr. Kelly was a member of the Alpha Kappa Kappa medical fraternity and a life member of the Saint Paul Athletic Club. Hunting was his favorite hobby. He possessed a fine tenor voice and enjoyed classical music in all its forms.

Dr. Kelly was married in 1914 to Leslie F. Terry of Saint Paul. She preceded him in death in February, 1945. Surviving him are four children: Paul Richard of Modesto, California; Howard William of Balboa Island, California; Dr. William Daniel, captain in the Army Medical Corps now in Japan; and Elizabeth Louise (Mrs. Jack C. Cooper) of Milwaukie, Oregon. He is also survived by his brother, Dr. John V. Kelly, and sister, Miss Margaret E. Kelly, both of Saint Paul.

KARL DEDOLPH

CLARENCE GEORGE PERRY

Clarence George Perry passed away suddenly January 6, 1948, at McAllen, Texas. He was born in Saint Paul, Minnesota, July 27, 1885, the son of A. W. and Mary Josephine Perry. He graduated from Humboldt High School, and the University of Minnesota Medical School in 1909, after which he served as intern at the City and County Hospital in Saint Paul. Following his internship he took postgraduate work in New York City. Returning to his native city he engaged in general practice with the late Dr. Michael Welch on the West Side.

Following his discharge from the Army, in which he served as a captain during World War I, he engaged in the study of his chosen specialty, eye, ear, nose and throat, in Bellevue Hospital in New York City. On his return to Saint Paul, he became associated with Dr. Henry Beaudoux with offices in the Lowry Building. When Dr. Beaudoux left the city, Dr. Perry continued his practice alone until his retirement January 1, 1947.

He was a member of the Saint Paul Athletic Club, the Town and Country Club, serving as president of the latter in 1935. He was also a member of Nu Sigma Nu Fraternity, Ramsey County Medical Society, Minnesota State Medical Association, and the American Medical Association.

Clarence's hobbies were golf, hunting and fishing, and he was most proficient in all.

He was married to Maude Gould on May 30, 1914. Surviving are his wife, a sister, Mrs. Fred Hennessy, two nieces and two nephews.

His gracious personality, his kindly smile, and pleasant ways endeared him to a host of friends. He will be missed by many people, in many ways.

CARL L. LARSEN, M.D.

CARDIAC EMERGENCIES

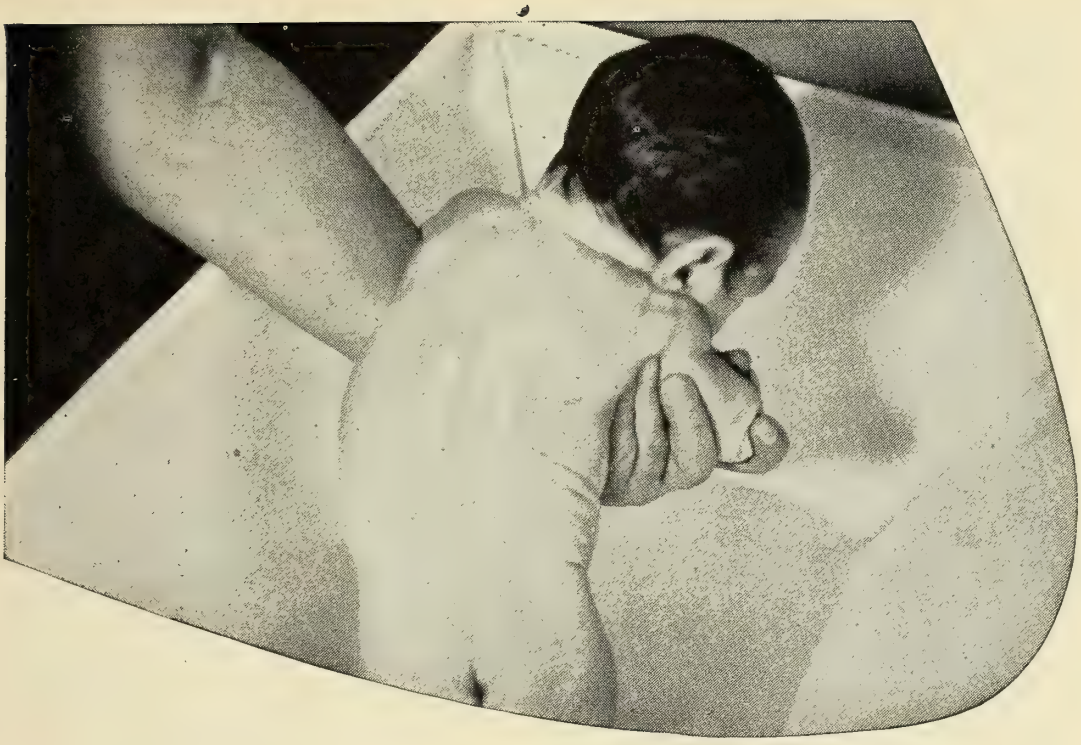
(Continued from Page 263)

and treat cardiac diseases should have ample knowledge to diagnose cardiac emergencies correctly and to know the correct procedures of treatment.

2. One must use common medical sense in many of these cases. Digitalis preparations are not to be used in every cardiac patient. Probably one reason why many patients have not died because of the abuse of digitalis is because the attending physician has not digitalized the patient. The electrocardiogram is not necessary at once in all cases, since it may needlessly aggravate the condition which is already present. This is true of many laboratory procedures. Make the diagnosis, treat the patient, then establish the diagnosis by laboratory means if necessary.

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Of General Interest

During the middle of January, Dr. Grant Hartnagel of Red Wing was in Chicago attending the annual meeting of the Chicago Gynecological Society.

* * *

Dr. John W. Stuhr, Stillwater, recently had the misfortune to fracture his left patella and as a consequence was confined to a hospital for a period.

* * *

New city health officer in Wayzata is Dr. C. J. Martinson, who was appointed to the position at a January meeting of the Wayzata city council.

* * *

"The Treatment of Diseases of the Blood" was the title of a paper presented by Dr. James M. Stickney, Jr., Rochester, at a meeting of the Kenosha County Medical Society at Kenosha, Wisconsin, on February 5.

* * *

In Aberdeen, South Dakota, on January 20, Dr. Charles H. Scheifley of Rochester discussed "The Surgical Risk in Heart Disease" at a meeting of the district medical society.

* * *

A former Fellow in urology at the Mayo Foundation, Dr. Alfonso de la Pena has received the appointment of professor of urology at the University of Madrid, Spain. Dr. Pena left the Mayo Clinic in 1930.

* * *

Attending a meeting of the Cerro Gordo County Medical Society in Mason City, Iowa, on January 13, Dr. R. J. Jackman, Rochester, presented a paper entitled "Rectal Problems in General Practice."

* * *

Upon resignation of the former coroner, Murray County commissioners appointed Dr. Richard M. Johnson, Slayton, as coroner of Murray County. Announcement of the appointment was made early in February.

* * *

New trustee of the Minnesota Community Research Council is Dr. Jay M. Cook, Staples, who was elected to the position at the annual meeting of the organization held in Minneapolis on January 30.

* * *

Dr. Meyer S. Belzer, Minneapolis, former division surgeon, was a speaker at a meeting of the Minnesota Chapter of the 106th Division Association on February 6 in Minneapolis.

* * *

Among Minnesota physicians attending a convention of the American Academy of Orthopedic Surgeons, held in Chicago during the latter part of January, was Dr. E. H. Juers of Red Wing.

* * *

"Heart Disease, Its Prevalence and Care" and "Purposes of the Minnesota Heart Association" were the subjects discussed by Dr. Charles Koenigsberger, of the Mankato Clinic, when he spoke at a meeting of the American Association of University Women on January 20 in Mankato.

* * *

Dr. R. W. Backus, member of the Nopeming Sanatorium staff, was speaker at a meeting of the Arrowhead chapter, Order of the Eastern Star, in Duluth on January 24.

* * *

When officials of Mazeppa took over their posts for 1948 at a village council meeting on January 7, Dr. Martin G. Flom of Zumbrota was appointed village health officer.

* * *

Physicians and their wives from the Mesaba Clinic and the Adams and Morsman Clinics were guests at an open house held on January 4 by Dr. and Mrs. Robert L. Bowen of Hibbing.

* * *

New assistant to Dr. Karl Pfuetze at Mineral Springs Sanatorium is Dr. William M. Ashe, who in January moved to Cannon Falls from Rochester, where he has a fellowship in surgery.

* * *

Guest speaker at a special meeting of the Women's Welfare League, held in Saint Paul on January 21, was Dr. Edwin J. Rose, manager of the Veterans Administration Hospital at Fort Snelling.

* * *

Early in January, Dr. Harold J. Anderson, who had been associated in practice with Dr. M. R. Williams in Cannon Falls, left to complete a fellowship in surgery at Minneapolis General Hospital.

* * *

Dr. Charles W. Fogarty, Jr., of Saint Paul, spoke before the McLeod County Medical Society at Glencoe, Minnesota, February 19, 1948, on the subject, "The Diagnosis and Treatment of the Common Rheumatic Diseases."

* * *

In late January, while inspecting the School of Aviation Medicine at Randolph Field, Texas, Dr. Howard B. Burchell, Rochester, addressed the faculty, student flight surgeons and nurses on "Relationship of Cyanosis and Arterial Oxygen Desaturation."

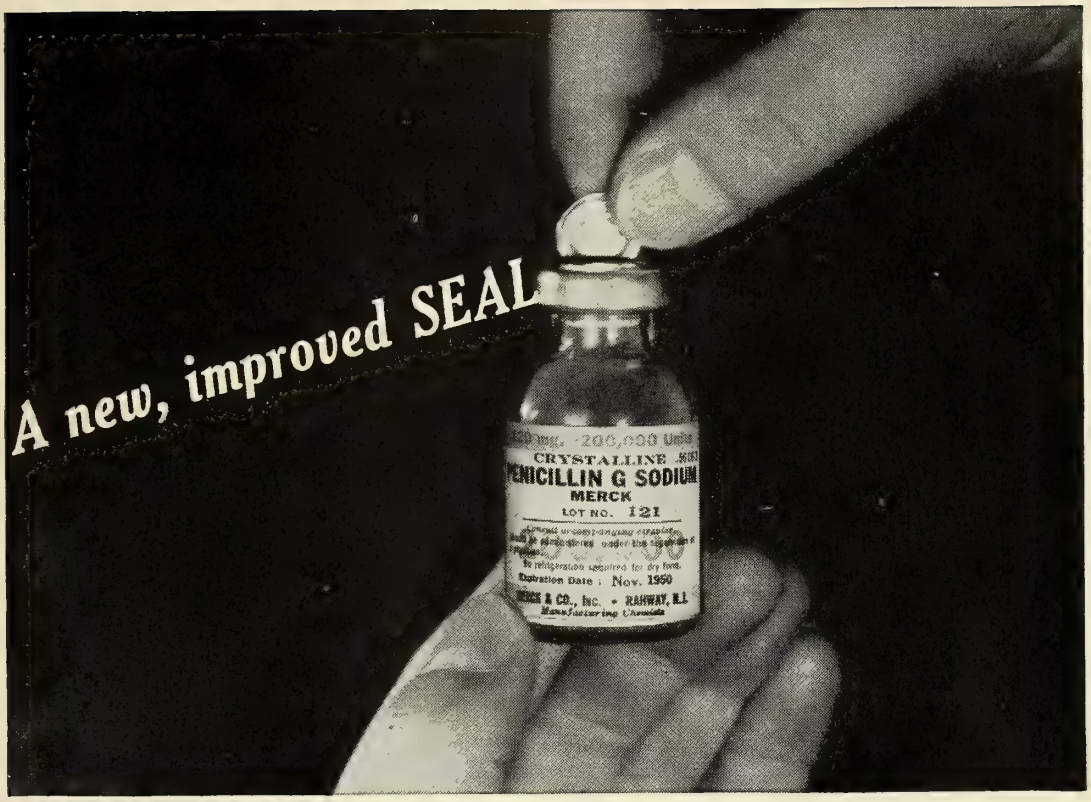
* * *

Participating in a postgraduate course at George Washington University, Washington, D. C., on February 12 and 13, Dr. A. M. Snell, Rochester, presented a paper entitled "Differential Diagnosis of Jaundice" and assisted in a clinic on surgery of the liver, spleen and pancreas.

* * *

Dr. Alfred Uihlein, Jr., Rochester, presented a paper at a meeting of the La Crosse County Medical Society

(Continued on Page 316)



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(Continued from Page 314)

on February 10 in La Crosse, Wisconsin. The title of the paper was "Injuries of the Head with and without Injury of the Brain; Diagnosis and Management."

* * *

Members of the Minnesota Academy of Ophthalmology and Otolaryngology, meeting in Saint Paul on January 16, heard Dr. H. L. Williams, Rochester, speak on "Diagnosis and Treatment of Endolymphatic Hydrops without Vertigo."

* * *

Chairman of the budget committee of the St. Louis County Tuberculosis and Health Association is Dr. Mario Fischer, Duluth, who was named to the post at a meeting of the directors in Duluth on February 10. Annual meeting of the group will be held on April 20.

* * *

Dr. Charles F. Medlin, Truman, was married on December 28 to Miss Harriet Bush of Granite Falls. Dr. Medlin, who was formerly of Minneapolis, was graduated from the University of Minnesota Medical School in 1942.

* * *

Council chairman of the Minnesota State Medical Association, Dr. F. J. Elias, Duluth, spoke on "Health Legislation" at a meeting of the Women's Auxiliary to the St. Louis County Medical Society, held in Duluth on January 13.

* * *

Diseases of the chest were discussed by Dr. A. E. Krieser, Mankato, at a meeting of the Immanuel Hospital Auxiliary on January 9 at the Mankato YWCA. Dr. Krieser was formerly on the staff of the Ah-Gwah-Ching Sanatorium.

* * *

Recently elected as a member of the board of Community Health Service, in Minneapolis, was Dr. Hermina Hartig, who was named to the post at a meeting of the organization in Minneapolis on January 18.

* * *

Members of the Franklin School PTA, meeting in Anoka on January 21, heard Dr. A. B. Rosenfield, director of health district No. 6, Minnesota Department of Health, speak on "Common Communicable Diseases and Immunization."

* * *

After returning from four years of service in the army, three years of it in the Southwest Pacific, Dr. A. A. Bodaski in January opened offices in Le Center for the practice of medicine. Before entering the army, Dr. Bodaski practiced at Montgomery.

Formerly of Winona, Dr. Roger MacDonald has become associated in practice with Dr. R. D. Hanover in Littlefork. After graduating from the University of Minnesota Medical School, Dr. MacDonald interned at St. Luke's Hospital in Duluth.

* * *

Dr. Stewart Thomson, associate professor of public health at the University of Minnesota, is broadcasting health information to the public, under the sponsorship of the Minnesota State Medical Association, over KUOM on Wednesdays from 11:00 to 11:15 a.m. and over WCCO on Saturdays from 9:15 to 9:30 a.m.

* * *

Two follow-up tuberculosis chest clinics were held in Albert Lea during January by Dr. Karl Pfuetze, superintendent of Mineral Springs Sanatorium, who on January 12 and again on January 27 examined persons known to have had active tuberculosis and administered Mantoux tests to all persons requesting one.

* * *

Price increases adopted by the Winona County Medical Society were agreed to be justified when the subject was discussed in impromptu talks at the January 6 meeting of the Winona Toastmasters Club. Among those appearing on the program were Dr. F. J. Vollmer and Dr. George Loomis.

* * *

Speaking at a meeting on January 21 sponsored by the Women's Board of St. Barnabas Hospital and held at the Minneapolis YWCA, Dr. Benjamin M. Spock, Rochester, discussed "Emotional Needs of Children of Various Ages." Dr. Spock is the author of *The Common Sense Book of Baby and Child Care.*

* * *

Dr. K. M. Simonton, Rochester, while attending the Middle Section meeting of the American Laryngological, Rhinological and Otological Society in Columbus, Ohio, on January 19 and 20, presented a paper written in collaboration with Dr. J. X. Medwick entitled "Epidermoid-like Lesions of the Frontal Bone Simulating Mucocele; Report of Two Cases."

* * *

Several Minnesota discussion groups are preparing material for the first International Mental Health Congress, to be held in London in August, it was announced on February 11 by Dr. Reynold A. Jensen, child psychiatrist at the University of Minnesota. He said that plans for the gathering call for the formation of a World Mental Health Federation.

(Continued on Page 318)

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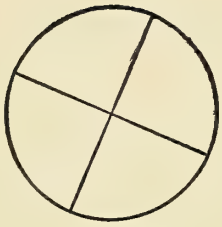
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[1]Harris, S. C.; Ivy, A. C., and Searle, L. M.: THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT: A Consideration of the Theory of Hunger and Appetite, J.A.M.A. 134:1468 (Aug. 23) 1947.

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(Continued from Page 316)

"Outstanding young man of Warren" was the title conferred on Dr. Martin J. Bechtel at a recognition dinner given by the Warren Junior Chamber of Commerce on January 19. Long active in North Star District Boy Scout activities and general affairs of the Jaycees, Dr. Bechtel is a member of the staff of the Warren Clinic.

* * *

The son of Dr. B. C. Ford of Marshall, Dr. Jack Ford began a fellowship with the Mayo Foundation at Rochester on January 5. A graduate of Marquette University, Dr. Ford interned at Bethesda Hospital, Bethesda, Maryland, then served in naval hospitals in England, France and Germany for more than a year.

* * *

Coming from a practice in Auburn, Washington, Dr. Jay L. Kevern has become associated with Dr. A. J. Lewis and Dr. C. W. Lewis in Henning. A graduate of the University of Minnesota Medical School in 1944, Dr. Kevern interned at a naval hospital at Long Beach, California, and later served in the navy aboard the U.S.S. Brazos.

* * *

Speaking before a delegation of the American Association of Schools of Social Work, at a meeting in Minneapolis on January 22, Dr. M. M. Weaver, assistant dean of medical sciences at the University of Minnesota, described the emphasis the University is now placing on interesting and training students to become general practitioners.

* * *

January 22 marked the fiftieth wedding anniversary of Dr. and Mrs. H. P. Dredge of Sandstone. The event was celebrated by the physician and his wife in Santa Monica, California, where they were enjoying a long winter vacation. Married in 1898 in Duluth, Dr. Dredge practiced medicine in Belview until 1903, then moved to Sandstone to open the practice that he still maintains.

* * *

A Certificate of Merit from the President of the United States was awarded on February 5 to Dr. Donald C. Balfour, director emeritus of the Mayo Foundation. Presentation of the certificate, which was awarded "for outstanding fidelity and meritorious conduct in the aid of the war effort," was made by Rear Admiral F. L. Conklin, medical officer of the Ninth Naval District with headquarters at Great Lakes, Illinois.

* * *

Members of the Saint Paul Surgical Society, at a meeting held on January 21, heard Dr. George Crile, Jr., of the Cleveland Clinic in Ohio, state that recently discovered drugs may largely replace surgery in the future treatment of hyperthyroidism. Dr. Crile also discussed new developments in the surgical treatment of goiter and described the use of radioactive iodine for therapeutic purposes.

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After being discharged from the army in November, 1947, Dr. John H. Reitmann opened offices for the practice of medicine in Hastings early in January. A former resident of Red Wing, Dr. Reitmann graduated from the University of Minnesota Medical School, interned at Milwaukee Hospital in Milwaukee, Wisconsin, and then served in the army for two and one-half years, most of the time in Germany.

* * *

More than 100 friends of Dr. and Mrs. Erling G. Hestesnes met at the First Lutheran Church in Albert Lea on January 17 to give a farewell dinner for the couple who planned to leave on January 28 to serve as medical missionaries in South Africa. A graduate of the University of Minnesota Medical School, Dr. Hestesnes served as a captain in the army during World War II, most of the time in the Pacific theater of operations.

* * *

Numerous Minnesota physicians attended a three-day cancer-control course held at the University of Minnesota Center for Continuation Study January 19 to 21. Among those in attendance were Dr. R. J. Wilkowske, Owatonna; Dr. Elmer Hartung, Claremont; Dr. A. Harold Mork, Anoka; Dr. David P. Anderson and Dr. Paul C. Leck, Austin; Dr. H. B. Troost, Mankato, and Dr. Joseph E. Murphy, Marshall.

* * *

Dr. Jeannette L. Baker, Fergus Falls, presided when the advisory committee of the Summer Roundup met in Saint Paul on January 30 to discuss plans to provide pre-school health examinations for all Minnesota children who enter school for the first time in September. The summer Roundup compaign is sponsored by the Minnesota Congress of Parents and Teachers, with the co-operation of the Minnesota Public Health Association.

* * *

Steak dinners were eaten on two consecutive nights when the physicians comprising the Estrem Clinic in Fergus Falls entertained the nurses, technicians and office force members of the clinic and St. Luke's Hospital on the evenings of January 7 and 8. The party was held on the two successive evenings to allow the entire nursing staff of the hospital to attend, half of the members on each night. Introduced at the dinners was Dr. Daehlin, new staff member of the clinic.

* * *

On January 2, Dr. Ralph E. Wenzel, formerly with the Albert Lea Medical and Surgical Center, became associated in practice with Dr. George W. Drexler in Blue Earth.

A graduate of Northwestern University in 1938, Dr. Wenzel served his internship at the U. S. Marine Hospital in New Orleans, then obtained a commission in the U. S. Public Health Service, working in Marine hospitals in Alabama, Indiana, and Chicago. During the war he was assigned to the U. S. Coast Guard, being stationed in Los Angeles and Hawaii. After resigning his commission in 1946, he engaged in general practice in Albert Lea for a year.



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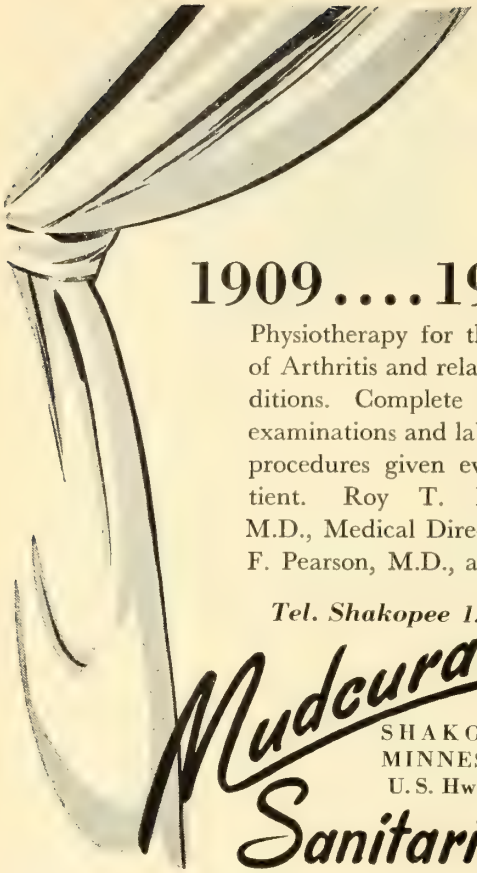
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1. Kasper, J. A. and Jeffrey, L. A.: A Simplified Benedict Test for Glycosuria, Amer. J. Clin. Pathology, *14*:117-21 (Nov.) 1944.

2. Haid, W. H.: The Use of Screening Tests in the Clinical Laboratory, J. Amer. Med. Tech., *8*:606-14 (Sept.) 1947.

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MEDICINE—Intensive course, two weeks, starting April 26.
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Electrocardiography and Heart Disease, four weeks, starting May 3.
DERMATOLOGY—Formal course, two weeks, starting April 26.
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Two Mayo Clinic physicians spoke at the Careers Day conference held at Carleton College, Northfield, on February 11. Dr. Arthur B. Hunt, consultant in obstetrics and gynecology at the clinic, discussed the field of medicine, and Dr. A. H. Sanford, senior consultant in the division of clinical laboratories, told students at Carleton about medical technology. Thirty-four business and professional men and women participated in the conference which was designed to assist students in choosing a life work.

* * *

Now on the staff of the Gamble Clinic in Albert Lea is Dr. O. A. Erdal, formerly of Milwaukee, Wisconsin, who joined the group late in January.

A native of Bricelyn, Dr. Erdal graduated from the University of Minnesota Medical School in 1943, serving his internship at St. Mary's Hospital in Milwaukee. After a period as a flight surgeon in the Air Forces, he returned to St. Mary's Hospital where he served as chief resident for a year and a half.

* * *

Principal speaker at a meeting of Section One of the Child Psychology Study Circle, held in Saint Paul on February 2, was Dr. Edward Dyer Anderson, clinical associate professor of pediatrics at the University of Minnesota, who spoke on "The Art and Wisdom of Being a Parent."

A native of Duluth who studied medicine at the University of Minnesota, later taking postgraduate work at Harvard and in Vienna, Dr. Anderson served in World War II as a captain in the navy medical corps.

* * *

Included in the group of Minnesota physicians who attended a continuation course in proctology at the University of Minnesota February 2 to 7 were Dr. C. A. Saffert, New Ulm; Dr. James L. Turner, Rochester; Dr. Philip F. Eckman, Duluth, and Dr. Marshall I. Howard and Dr. Norman F. Stone, both of Mankato. The course was given under the direction of Dr. Walter A. Fansler, clinical assistant professor of surgery, and consisted of lectures at the Center for Continuation Study and clinics at Minneapolis General and Fort Snelling Veterans Hospitals.

* * *

Establishment of a social security health program, assuring adequate medical and hospital care for all persons with low incomes, was recommended by Governor Luther W. Youngdahl in a talk at the annual convention of the Minnesota Federation of County Fairs on January 22 in Minneapolis.

In speaking of health programs in Scandinavian countries which he recently visited, Governor Youngdahl said, "We have got to come to something of that kind. We must make sure very citizen of the lower income group is provided with decent hospital and medical care."

* * *

The attenion of the profession is again called to the service given by the cancer home known as Our Lady of Good Council, located at 2076 St. Anthony Avenue, Saint Paul. The home was established in 1941 and is

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* * *

Two educational talks on cancer control were presented before Duluth groups on February 10.

Dr. Elizabeth Bagley, Duluth, spoke at a meeting of the Duluth Business and Professional Women's Club at the Arrowhead Hotel, presenting a motion picture on cancer entitled "The Traitor Within." Members of the B'nai B'rith Lodge, at a meeting in Temple Emanuel, heard an address by Dr. C. H. Mead, Duluth, and saw a moton picture on cancer control entitled "You Are the Switchman."

Both talks were scheduled through the speakers' bureau of the Duluth District of the American Cancer Society.

* * *

Two new physicians became associated with the Mesaba Clinic on January 19. Joining the group at the Hibbing clinic was Dr. W. H. Ylitalo, while Dr. R. C. Fortier became a member of the clinic at Marble and Calumet.

Dr. Ylitalo, a former resident of Keewatin, graduated from the University of Minnesota and interned at the Mare Island Naval Hospital in California. Dr. Fortier, formerly of Little Falls, also graduated from the University of Minnesota Medical School but served his internship at Minneapolis General Hospital. Both physicians are engaging in general practice.

* * *

"Facts and Figures about Infantile Paralysis," (1948 edition), a publication of the National Foundation for Infantile Paralysis, is now available to physicians and public health workers. Incidence of the disease in the United States is shown in tables, maps and charts. Statistics furnish information on age and sex distribution, case rates, crippling conditions and mortality. For the first time, the publication includes data on the disease in foreign countries.

Copies of the booklet (No. 59) may be secured free of charge from the Education Service, National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y.

* * *

A native of Saint Paul, Dr. Paul B. Magnuson, has been appointed chief medical director of the Veterans Administration. Appointed by VA administrator Carl R. Gray, Jr., of Saint Paul, Dr. Magnuson succeeds Dr. Paul R. Hawley, who resigned on December 31.

Born in Saint Paul, Dr. Magnuson took his pre-

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medical training at the University of Minnesota, then studied medicine at the University of Pennsylvania. An orthopedic surgeon, he has practiced in Chicago since 1908. He is professor of surgery and chairman of the Department of Bone and Joint Surgery at Northwestern University. Since 1945, Dr. Magnuson has been second in command of veterans' medical services, under Dr. Hawley.

* * *

A roundtable discussion on cancer concluded the annual meeting on January 20 of the Minnesota Division of the American Cancer Society, held in the auditorium of the University of Minnesota Museum of Natural History.

Speakers at the discussion, which was open to the public, were Dr. Arthur H. Wells, Duluth, president of the division and chairman of the roundtable talk; Dr. Henry Michelson, head of the Department of Dermatology at the University; Dr. R. S. Ylvisaker, clinical associate professor of internal medicine; Dr. Maynard Nelson, clinical instructor of surgery; Dr. Dean Fleming, chief of the preventable disease section of the Minnesota Department of Health, and Dr. J. C. Erhrenberg, Minneapolis gynecologist.

* * *

Inducted as president of the American Academy of Orthopaedic Surgeons on January 28, at its annual meeting in Chicago, Dr. Myron O. Henry of Minneapolis stated that orthopedic surgery is making "fabulous" strides. Citing statistics to show the need for this type of survery, he said that (1) about 1,150,000 persons were hurt in auto accidents in 1947, many suffering complicated bone and joint injuries; (2) disabling accidents occurred to 10,400,000 persons in 1946, with 370,000 of them becoming permanently disabled, and (3) at least 6,850,000 Americans now have rheumatism or arthritis, and 2,600,000 more have specific orthopedic faults.

A graduate of the University of Minnesota in 1920, Dr. Henry is a staff member of Northwestern Hospital, Minneapolis, and a clinical assistant professor of surgery at the University of Minnesota.

* * *

New cement building blocks, designed to reduce dampness in low-cost homes, have been developed by Dr. H. R. Tregilgas, Saint Paul.

When he discovered that many of his patients with pulmonary diseases were living in damp basement houses, the Saint Paul physician decided that prevention might be better than cure. Looking for some means of reducing dampness in cement building blocks, he found a way of sandwiching an asphalt insulation board between two concrete sections held together with galvanized reinforcing wire.

Tests conducted at the University of Minnesota Institute of Technology have shown that the new blocks increase insulating efficiency about 40 per cent. At the present, temperature and moisture tests are being conducted in a five-room house which was recently constructed of the new blocks in South Saint Paul.



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Southwestern Minnesota Health Day, the first occasion of its kind in Minnesota, was held in Worthington on February 23. Participating in the all-day meeting were representatives from Pipestone, Murray, Cottonwood, Rock, Nobles and Jackson counties.

Panel discussions on community health problems, home and farm safety, and child behavior problems were included in the program prepared by local public health workers and representatives of the Minnesota Department of Health. Also shown during the day were several motion pictures on home safety, nutrition, dental health and similar subjects. At the evening meeting, the six winners of a health and safety poster contest, which had been held in the high schools of the six counties, were introduced. Principal speaker of the evening was Governor Luther W. Youngdahl. Among physicians participating in the health day were Dr. B. O. Mork, Jr., Worthington, and Dr. Robert N. Barr of the Minnesota Department of Health.

* * *

Dr. George N. Aagaard, Minneapolis, has been appointed by the Board of Regents of the University of Minnesota to succeed the late Dr. William A. O'Brien as director of postgraduate medical education at the University.

A graduate of the University of Minnesota Medical School in 1937, Dr. Aagaard interned at the St. Cloud Hospital and at Minneapolis General Hospital. In 1942, following four years of general practice in Minneapolis, he was appointed to a medical fellowship at the University, and in 1943 he was named a clinical instructor in medicine. With his appointment to admitting physician in the Division of Internal Medicine in 1946, he was promoted to the rank of assistant professor.

Last year, Dr. Aagaard re-entered the private practice of medicine in Minneapolis, but retained a clinical professorship in medicine at the University. His new appointment as director of postgraduate medical education, which became effective March 1, carries the rank of associate professor of medicine.

* * *

The first cure of rhinoscleroma by streptomycin has been announced.

Reported recently in the *Proceedings of the Staff Meetings of the Mayo Clinic,* the successful nonsurgical treatment of the rare nose disease was described by Dr. Kenneth D. Devine, Dr. Lyle A. Weed, Dr. Donald R. Nichols and Dr. Gordon B. New of the Mayo Clinic.

While considering performing a tracheotomy on a patient with rhinoscleroma, the physicians discovered bacteria of the Klebsiella family in one of the hard masses of tissue that had grown down into the larynx. Accordingly, it was decided to try streptomycin therapy. After one week of streptomycin injections, it became necessary to halt treatment because of the development of side reactions. Twelve days later, the streptomycin injections were resumed and then continued for forty-three consecutive days. After receiving 95 grams of streptomycin within a period of two months,



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the patient was pronounced clinically cured. A plastic operation was later performed on the patient's nostrils to replace scar tissue with skin grafts.

* * *

At a special meeting of the Park Region Medical Society in Fergus Falls on January 16, representatives of the Minnesota Department of Health explained the functions and purposes of a unit of the state department that was to be established in the city to take care of twelve counties in that part of the state.

Introduced by Dr. W. L. Burnap, Fergus Falls, were Dr. Robert N. Barr, Dr. Percy T. Watson, and Miss Nora Rolf, field nurse, all of the State Department of Health. The three speakers pointed out that the new unit would be similar to five already set up throughout the state—at Duluth, Bemidji, Rochester, Worthington and Mankato—and that plans were to add three more units. They said that the unit at Fergus Falls would consist of a part-time physician, a sanitation engineer, a field nurse and a clerk, who would supervise county public health nurses, investigate sources of communicable disease, take part in health programs, and assist local physicians in preventing disease. The local unit would be a means of bringing the functions and aid of the Minnesota Department of Health more directly into the community.

* * *

The Cottonwood County Medical Club, of which Dr. Homer Basinger of Windom is secretary, has announced that vaccinations against smallpox and diphtheria were carried out on October 24 and November 21, 1947, in the six towns of Cottonwood Couny—Windom, Bingham Lake, Mt. Lake, Storden, Jeffers and Westbrook.

Immunization clinics were organized by the local physicians and the County Nursing Service in conjunction with the Minnesota Department of Health. Information was distributed to children in both rural and town schools, and newspapers carried advance information regarding the clinics. As a result, the following vaccinations were carried out: smallpox—1,097 (11 in children under one year of age, 133 in the one-to-four age group, and 953 in those five years or over); diphtheria—1,558 (22 in those under one year, 201 in the one-to-four age group, and 1,328 in those five years or over). In addition, 607 diphtheria booster inoculations were given (33 in the one-to-four group). The reason given for the low number vaccinated in the preschool age group is that it is estimated that 80 per cent of the children in this group had already been vaccinated before they were two years old.

* * *

Though many Minnesota physicians are under the impression that the Emergency Maternity and Infant Care program (EMIC) has been discontinued, actually it is still in operation but undergoing a gradual process of liquidation.

The U. S. Children's Bureau recently announced that maternity care is available only to those who were eligible on June 30, 1947—which means that all maternity care will be completed by the spring of 1948, although babies born to this group of patients will be entitled to

receive immunizations and care of illnesses during the first year of life, thereby not ending the EMIC program until the spring of 1949.

Eligibility for benefits under the program is based on three major qualifications: (1) the husband must be or have been in the four lower pay grades, or an aviation cadet; (2) he must have been in the service on or before June 30, 1947; (3) the wife must have become pregnant by June 30, 1947, and been pregnant at some time while the husband was in one of the four lower pay grades of the service.

Physicians have been urged to accept these patients in order that the EMIC program may be completed without difficulty. Further information may be obtained from the Division of Maternal and Child Health, Minnesota Department of Health, University Campus, Minneapolis.

* * *

With the opening of a cancer detection center at the University of Minnesota Hospitals during the week of February 22, another weapon has been provided for the continuing battle against the disease which kills more than 400 Americans daily.

Under the directorship of Dr. David State, assistant professor of surgery at the University, the new center is being financed by the Minnesota Division of the American Cancer Society, the National Cancer Institute of the U. S. Public Health Service and the University's Malignant Disease Research Fund.

Not a clinic for providing treatment, the new cancer detection center is a place to which symptomless men and women of Minnesota, aged forty-five and over, may go for a thorough physical examination. If the examination reveals any indication of cancer or a pre-cancerous condition, the person examined will be advised to seek immediate treatment from his personal physician, and a report of the findings will be sent to that physician.

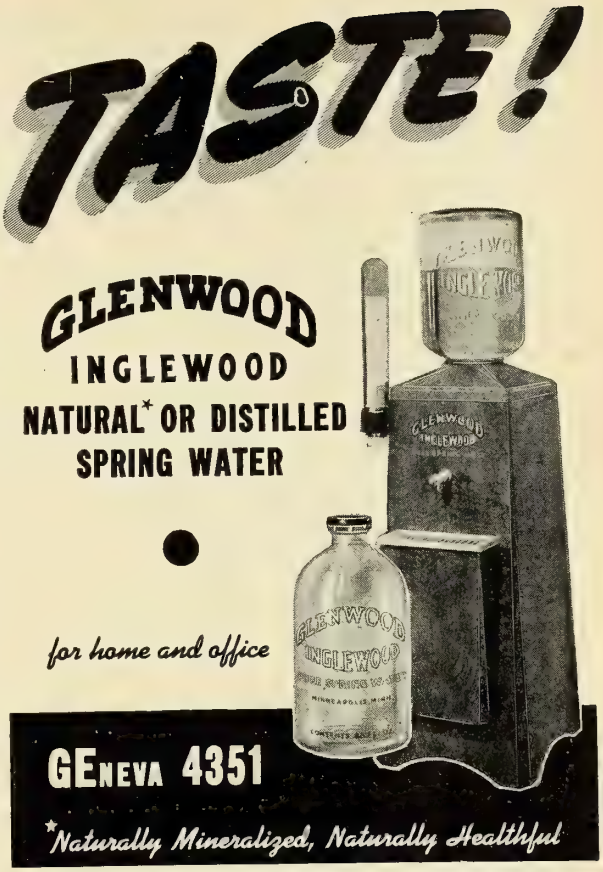
Any Minnesota resident, aged forty-five or over, can phone or write the cancer detection center for an appointment. A $5 registration fee is charged, though no one is turned away for lack of funds. The center is open two days each week, Tuesday for women, and Thursday for men, hours 8 a.m. to 5 p.m. Capacity of the center is between twenty and thirty persons each day. The complete examination requires a full day, and includes complete blood and urine examinations as well as a chest x-ray. When gastrointestinal x-ray studies are indicated, an appointment is made for a later date.

* * *

New AMA Directory

Physicians who have not returned their directory information cards, supplying information for the new American Medical Directory, are urged to do so. A second request is being sent out by the AMA to those who have not returned the first one.

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* * *

Wanted by Postal Authorities

The Post Office Department would like to obtain information leading to the arrest of an expert check forger named Jerome Poster, who also goes by various aliases. His eyesight is allegedly impaired by a recent self-inflicted injury, but the actual presence or extent of impairment of vision is questionable.

He is described as follows: age 24, height 6 feet, weight 186 pounds, chesnut-colored eyes, black curly hair, dark complexion, medium slender build. A dark brown mole is present on his right cheek. He is Jewish but looks Italian.

Anyone possessing information as to this man's whereabouts should notify Post Office Inspector F. L. Pierce, Saint Paul, Minnesota (Telephone: Cedar 8033, extension 446 or 428).

BLUE SHIELD NEWS

This is the first article written by the Minnesota Medical Service, Inc., to be published in MINNESOTA MEDICINE. Each month, a similar article will be published to bring to the physicians of the state the latest information on Blue Shield. We feel that the physicians of the state should be informed as to what is going on in regard to their "baby" and that they will be interested in its growth and development.

At the present time, more than 2,100 licensed doctors of medicine in the State of Minnesota have signed agreements to become Blue Shield participating doctors of medicine. With support like that the Minnesota Blue Shield cannot fail. To date there are 153 Blue Shield groups throughout the state, or 3,910 contracts in effect. That means that about 10,000 persons are protected by Blue Shield.

The first payment on claims was made on January 15, 1948. It was for $227.50 and covered nine cases. The February 15 pay-off was for $864 and covered seventeen cases. Thus far, we have paid twenty-six claims for a total of $1,091.50. It is anticipated that the March payments will well exceed the $1,000 mark.

The Blue Shield belongs to the doctors, and it is in their power to make it the best in the country or cause it to fail. The doctors of the state don't want a failure. Also, they do not want an organization that is not operated by professional men. As a result, the board



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of directors is composed of eleven physicians, one from each of the state congressional districts and two from the state at large. These men are open to suggestions, and it is suggested that the district member be contacted if it is felt that anything should be brought to the attention of the board. The board members and their districts are:

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District No. 3

Always remember that the Blue Shield is your organization, supported by and governed by the medical profession, and it is within your power to make or break it.

HOSPITAL NEWS

Staff officers of the following Minnesota hospitals were elected to office during January and February.

Wesley Hospital, Wadena.—At the annual meeting of the medical staff of Wadena's Wesley Hospital on January 7, Dr. C. W. Lewis of Henning was elected chairman of the medical staff. Named as vice chairman was Dr. E. C. Hanson of New York Mills, while Dr. Robert Pierce, Wadena, was elected secretary.

St. Mary's Hospital, Minneapolis.—Dr. F. B. Mach, newly appointed chief of staff of St. Mary's Hospital in Minneapolis, commenced his new duties on January 13 when the staff members held their first meeting of the year. A graduate of the University of Minnesota Medical School, Dr. Mach has been a member of the staff of St. Mary's Hospital for more than thirty years.

St. Luke's Hospital, Duluth.—Chief of staff of St. Luke's Hospital, Duluth, is Dr. Gordon C. MacRae, who was named to succeed Dr. A. O. Swenson at the annual meeting of the hospital staff on January 15. Dr. S. E. Urberg was elected to the office of vice chief of staff. At the meeting the following officers were named for two-year terms: Dr. S. H. Boyer, Jr., chief of medicine; Dr. P. N. Bray, chief of obstetrics; Dr. A. L. Abraham, chief of x-ray section; Dr. F. C. Jacobson, chief of anesthesiology, and Dr. M. H. Tibbetts, chief of orthopedics.

Eitel Hospital, Minneapolis.—It was announced on January 24 that Dr. Wallace I. Nelson had been elected chief of staff of Eitel Hospital, Minneapolis, to succeed Dr. Frank Hirschfield. Also elected to office were Dr. Alfred T. Baker, assistant chief of staff, and Dr. Melvin B. Sinykin, secretary-treasurer.

Hibbing General Hospital, Hibbing.—At the annual

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$15,000.00 accidental death.....$24.00
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staff banquet on February 9, marking the sixth year of operation for Hibbing General Hospital, announcement was made of new officers elected for 1948. Chief of staff is Dr. C. N. Harris, while Dr. Andrew Sinamark is vice president and Dr. Robert A. Murray is secretary. Departmental heads include Dr. C. Jacobson, surgery; Dr. Randall S. Derifield, medicine; Dr. L. W. Morsman, ophthalmology; Dr. Sinamark, otolaryngology; Dr. B. F. Flynn, pediatrics; Dr. T. A. Estrem, obstetrics; Dr. Carlyle Tingdale, contagion; Dr. C. S. Raadquist, x-ray, and Dr. R. E. Hansen, laboratory.

Swedish Hospital, Minneapolis.—On February 14 it was announced that Dr. Reuben Erickson had been named chief of staff of Swedish Hospital in Minneapolis. Named as vice chairman was Dr. Lawrence Carlson. Listed as heads of various committees were Dr. Robert Quello, Dr. M. L. Fredlund, Dr. Hamlin Mattson, Dr. J. S. Milton, Dr. Horace Scott and Dr. H. I. Gustason.

* * *

"The Relationship Between Hospital and Community" was the title of an address by District Judge Mark Nolan at the annual meeting of St. Mary's Hospital staff in Duluth on February 5. Election of staff officers was held at a business session of the meeting. Dr. C. O. Kohlbry, chief of staff-elect, in 1947, succeeded Dr. L. R. Gowan as chief of staff of the hospital.

* * *

The Madison Hospital Association announced early in January that it had received a gift of a set of general surgical instruments and a promise of an x-ray machine as soon as the new hospital was ready for its installation. The gift and the promise were from three local physicians, Dr. Nels Westby, Dr. W. N. Lee, and Dr. Magnus Westby, and constituted a definite step forward in the development of hospital facilities in Madison.

In Rochester on January 12, at the annual meeting of stockholders of the Kahler Corporation, hope was expressed that an addition of Colonial Hospital would be completed by August. Officers and directors of the group were re-elected. They remain Roy Watson, president and general manager; C. N. Judd, vice president; H. J. Harwick, secretary-treasurer, and M. M. Hayden, assistant secretary, with the other directors consisting of W. W. Lawler, Dr. M. S. Henderson and Dr. P. S. Hench.

* * *

The Ely-Winton Community Hospital, formerly the Winton School, was being remodeled during February to become a memorial dedicated to Ely-Winton youths who died in World War II. Cost of conversion was expected to be $50,000, more than two-thirds of which had been raised through solicitation by the end of January. The completed hospital will have thirty-five beds. On the board of trustees are Dr. O. E. Snyker, chairman, Frank Romsich, Bernard Hutar, C. V. Hammerstrom, Mrs. Ruth King, Uno Saari and Urho Salminen.

* * *

A drive to establish a community hospital at Harmony got under way in January. At a public meeting, Stanley Todd was named chairman of a citizens hospital committee to organize and conduct the campaign. Among those named to serve on the committee was Dr. Carl G. Nelson, Harmony.

* * *

Among nursing and hospital leaders participating in a meeting at Saint Paul on February 2 were Dr. P. F. Eckman, Duluth, member of the state board of examination and licensure of practical nurses; Sister M. Vivian, O.S.B., director of nursing at St. Mary's Hospital, Duluth, and Miss Hazel Gabrielson, superintendent of nurses at St. Luke's Hospital, Duluth. The group heard a report made by the Minnesota Advisory Committee on Nursing on what is being done to remedy the nurses shortage in Minnesota.

* * *

Members of the hospital commission of Baudette were in Park Rapids on January 18 inspecting its one-year-old hospital and gathering information that would aid in the construction of the Baudette hospital. Included in the group were Dr. A. A. Brink and Dr. Charles E. Stafford.

* * *

For the thirty-first consecutive year, Dr. O. F. Mellby, Thief River Falls, has been elected president of the Oakland Park Sanatorium commission. His re-election took place at the annual meeting of the commission on January 9.



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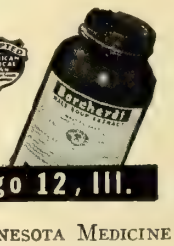
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Two radio talks on hospital construction were given in February by Dr. Viktor Wilson, chief of the Section on Special Services of the Minnesota Department of Health. Sponsored by the Blue Cross, in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association, the talks were entitled "Priorities for Your Hospital Building" and "Hospitals Where We Need Them," and were presented over station WTCN on February 9 and 23, respectively. Dr. Wilson reported the results of the state hospital survey, and gave information on the planning of new hospitals and the expansion of present ones, on the establishing of priorities for government grants for construction, and on the scientific placement of hospitals for best use.

* * *

The annual report of Oakland Park Sanatorium, prepared by Dr. B. A. Borreson, superintendent, showed that maintenance expenses of the institution increased considerably during the last year. Total expense of the sanatorium increased from $58,904 in 1946 to $65,865 in 1947, while total cost per day per patient increased from $3.57 to $4.30. Receipts in 1947 from state aid, paying patients, and other sources, amounted to $18,151.

* * *

Seven Waseca County physicians appeared before the Waseca city council on January 13 to urge improvement and enlargement of the Waseca Memorial Hospital.

Not asking for immediate action in expanding the eighteen-bed hospital to optimum size, the physicians suggested that construction of a small addition, large enough to store supplies and equipment, would make it possible to convert the present basement into hospital rooms for eight or ten patients. An increase in patients might enable the hospital to make expenses, instead of operating at a loss as it had during the last year, they pointed out. Optimum size of the hospital, to be aimed at when construction costs are lower and if financial aid can be obtained, would be forty to fifty beds.

The physicians present at the meeting were Dr. R. H. Davis, Dr. O. J. Swenson, Dr. S. C. G. Oeljen, Dr. H. M. McIntire, Dr. B. J. Gallagher, all of Waseca, and Dr. R. C. Hottinger and Dr. C. T. Wadd, of Janesville.

* * *

Minnesota Hospital Service Association elected the following officers at its annual board meeting on February 19: S. W. Pinkerton, Saint Paul, re-elected president; D. E. Bronson, Minneapolis, vice president; Dr. Peter D. Ward, Saint Paul, secretary; E. M. Jorgenson, Minneapolis, treasurer; and Harry E. Kern, Saint Paul, assistant treasurer.

HOSPITAL CONSTRUCTION PROGRAM FOR MINNESOTA

Details of a $25,000,000 hospital construction program, in which the Federal government would aid by contributing $8,300,000 over a five-year period, were announced late in January by Dr. Viktor O. Wilson, chief of the

Division of Special Services of the Minnesota Department of Health.

Under a plan recommended by a Minnesota hospital survey committee, the state would be divided into eleven regions, with the Twin Cities serving as a base area. The University of Minnesota Hospitals and the Medical School would be the principal base hospital for the entire state. The eleven regional hospitals would be in Crookston, Brainerd, Hibbing, Virginia, Fergus Falls, Duluth, St. Cloud, Willmar, Worthington, Mankato and Rochester.

Throughout the eleven regions there would be seventy-five "area" hospitals and thirty-nine "rural" hospitals, placing 98.5 per cent of Minnesota's citizens within twenty miles of adequate hospital facilities.

On the basis of the plan and according to results of a survey conducted in 1947, a priority list has been prepared for proper allotting of Federal funds to communities and areas to help finance the building and equipping of hospitals. The priority list is divided into four groups, according to the degree of need for facilities. In Group A are nineteen communities in which no hospital is located. Group B consists of thirty-six communities which have hospitals but no existing acceptable beds. Group C, also with thirty-six communities includes those with hospitals which need improvement or enlargement. The remaining thirty-five of the communities considered fall into Group D.

Opportunity to apply for Federal funds to finance one-third of the cost of construction and equipment will be offered according to priority number on the list, starting with Group A. After the opportunity is offered, community authorities will have thirty days to indicate a desire to construct a hospital under the terms of the plan. The community will then have sixty days to have preliminary plans drawn up and approved and to show ability to finance the project. An additional six months will then be allowed so that complete plans may be formulated and everything made ready for the start of construction.

If these deadlines are not met, the community loses its priority for the year and must wait until the following year before it can obtain funds. In the meantime, the opportunity is offered to the next name on the list.

Among requirements that must be met to qualify for receiving aid are (1) need for the hospital as shown in the state plan for hospital service; (2) public or nonprofit ownership of the hospital; (3) assurance by the owner that hospital service will be provided in the community without discrimination on account of race, creed or color; (4) assurance that services will be provided in reasonable amount to persons in the community unable to pay therefor; (5) ability of the owner to finance two-thirds the cost of construction; (6) ability of owner to finance the operation of the hospital, for which evidence must be provided; (7) ownership of a suitable site for the hospital, and (8) development of blueprint plans and specifications for construction by a registered architect in conformity with state and Federal regulations.

Communities receving the first nineteen priorities (Group A) are Pine River, Baudette, Sandstone, Cambridge, Aitkin, Forest Lake, Olivia, Le Sueur, Spring Valley, Grand Marais, Red Lake Falls, Sauk Centre, Blackduck, Elbow Lake, Wells, Greenbush, Karlstad, Floodwood and Zumbrota.

In Group B, receiving priorities 20 through 55, are Bagley, Long Prairie, Shakopee, Cook, Slayton, New Prague, Wheaton, Paynesville, Preston, Watertown, Buffalo, Winnebago, Anoka, Madison, Breckenridge, Pine City, Morris, Ortonville, Pelican Rapids, Cass Lake, Gaylord, Granite Falls, Mahnomen, Worthington, St. James, Moorhead, Blue Earth, Marshall, Deer River, Cloquet, Brainerd, Hastings, Springfield, International Falls, Two Harbors and Eveleth.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

TREATMENT BY DIET. Fifth Edition. Clifford J. Barborka, B.S., M.S., M.D., D.Sc., F.A.C.P. Assistant Professor of Medicine, Northwestern University Medical School, Chicago; Attending Physician, Passavant Memorial Hospital; Consultant in Gastro-enterology and Gastroscopy, Diagnostic Center, Hines Veterans Hospital; Formerly Consulting Physician, Mayo Clinic. 784 pages. Illus. Price, $10.00, cloth. Philadelphia: J. B. Lippincott Co., 1948.

BRIEF PSYCHOTHERAPY. A Handbook for Physicians on the Clinical Aspects of Neuroses. Bertrand S. Frohman, M.D. With collaboration of Evelyn P. Frohman. Foreword by Walter C. Alvarez, M.D. 265 pages. Price, $4.00, cloth. Philadelphia: Lea & Febiger, 1948.

OPERATIVE GYNECOLOGY. Sixth Edition. Harry Sturgeon Crossen, M.D. Professor Emeritus of Clinical Gynecology, Washington University School of Medicine; Consulting Gynecologist to Barnes Hospital, St. Louis Maternity Hospital, St. Luke's Hospital, De Paul Hospital and Jewish Hospital; and Robert James Crossen, M.D., Assistant Professor of Clinical Gynecology and Obstetrics, Washington University School of Medicine; Assistant Gynecologist and Obstetrician to the Barnes Hospital and St. Louis Maternity Hospital; Gynecologist to St. Luke's Hospital and De Paul Hospital. 999 pages. Illus. Price $15.00, cloth. St. Louis: C. V. Mosby Co., 1948.

DIABETES MELLITUS IN GENERAL PRACTICE. Arthur R. Colwell, M.D., Associate Professor of Medicine and Director of Medical Specialty Training, Northwestern University Medical School; Attending Physician, Evanston Hospital, Evanston, Illinois; Consulting Physician, Wesley Memorial Hospital, Chicago. 350 pages. Illus. Price $5.25. Chicago: Year Book Publishers, 1947.

In the most recent of the General Practice Manuals, the Year Book Publishers have presented a practical review on the subject of Diabetes Mellitus by Dr. Arthur Colwell of Northwestern University. An evaluation of this book must necessarily consider the value of the entire series. Their purpose is to give the general practitioner a concise and timely review of the subject in question, with emphasis on clinical application. In the reviewer's opinion, the series has proved of inestimable value to the acquisitive but busy practitioner who is attempting to keep pace with the many developments in the constantly changing realms of medicine. Some of the books in the series have fallen short of the aims of the publisher; others, among them Dr. Colwell's book, have accomplished their objectives remarkably well.

In *Diabetes in General Practice,* the author puts greatest emphasis on the management of the diabetic patient. He limits his discussion of the more academic questions of etiology, pathogenesis, et cetera, to the first forty-eight pages of his text; in the remaining 290 pages, he clearly and concisely sets down his recommendations on diabetic diet, desugarization, insulin administration, the management of acute complications, including diabetic coma and insulin shock, and, finally, the management of chronic complications. He places at the disposal of the busy practitioner an opportunity to gain insight in a few hours into diabetic problems that all too many busy doctors never adequately mastered. He does not fall into the error so frequently seen in medical writing, of covering his subject in so few words that the practical information sought is not set down.

The author does not afford himself space to present conflicting opinions on some of the points covered in the text. While, in some instances, this may lead to false premises, on the whole, it adds to the clarity and readibility of the book. His instructions for calculating the diabetic diet are sufficiently lucid to allow even the least dietary minded of physicians the opportunity to prescribe diabetic diets with a minimum of food lists and tables. The food tables presented in the text, together with the graphs showing the actions of the various insulin preparations, are, in the reviewer's opinion, the highlight of the book. The author covers the subject of insulin therapy thoroughly, including a good discussion of the use of insulin mixtures.

In the last two chapters of the book, the disease's complications and its effect on other diseases and bodily states are discussed. Diabetic acidosis is broken down into its grades of severity, and the methods of handling the various stages are considered. The important problem of diabetes in pregnancy is covered. Chronic complications, ideas as to their etiology, the possibility or impossibility of remedial care, and their management are carefully reviewed.

In summing up, it is believed that the book should serve to bring better diabetic care into the hands of the general practitioner seeking such aid. That it will not take the place of the more complete texts on the subject is obvious. It is highly recommended for its wealth of applicable information.

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TUBERCULOSIS. Francis Marion Pottenger, A.M., M.D., L.L.D., Professor of Medicine, University of Southern California School of Medicine, Medical Director of the Pottenger Sanatorium and Clinic for Diseases of the Chest, Monrovia, California. 579 pages. Illus. Price, $12.50. St. Louis: C. V. Mosby Co., 1948.

The distinguished medical director of the Pottenger Sanatorium has again drawn on his very extensive experience to prepare a textbook on pulmonary tuberculosis. In this volume much of the later literature is reviewed and some of the newer concepts of phthisiogenesis are discussed. His views on the relationship of visceral neurology to pulmonary disease occupy two chapters, in which he has emphasized the value of the demonstration of reflexes originating in pulmonary pathology. Many physicians lack his skill in detecting and interpreting such reflexes. Four chapters are devoted to the time-honored methods of physical diagnosis, all of which will help in the accurate detection of lesions which have progressed to an extent appreciable by such measures. In minimal cases the diagnosis must often be made, without their aid, from a study of the patient's history, tuberculin tests, sputum tests, including gastric expression and serial x-rays.

The discussion of the treatment of pulmonary tuberculosis is practically a résumé of all the measures that have been in vogue thus far in the twentieth century, not all of which, including open air treatment, tuberculin and heliotherapy, are considered necessary or advisable in many cases today.

In his discussion of collapse therapy, the advantages of pneumothorax are enumerated as contrasted with other operative procedures, and special advantages are claimed for it. Rest of the diseased lung is, of course, the object of all collapse therapy, as the author has made plain. The modern thoracic surgeon has, as the author admits, several resources besides pneumothorax, and he must be called upon to use them in the individual case as necessity arises. No general regime will fit all patients. They are safest if under the constant close observation of a group of specialists, preferably in a sanatorium, and including an experienced chest surgeon.

The book contains much useful information. Physicians in charge of tuberculosis patients should also have access to other late books and the current literature.

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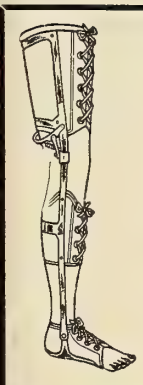
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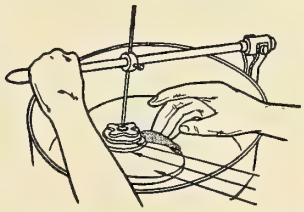
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Volume 31 **April, 1948** **No. 4**

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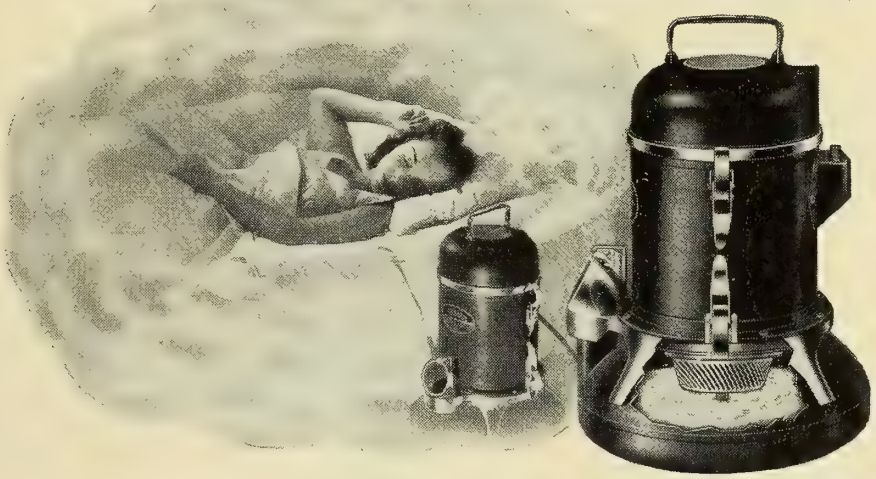
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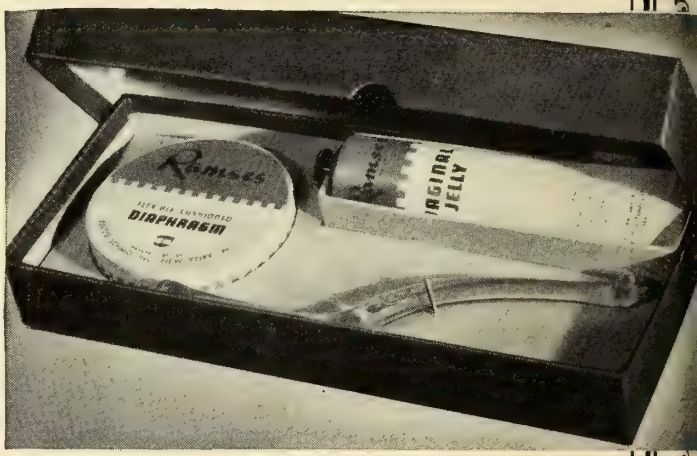
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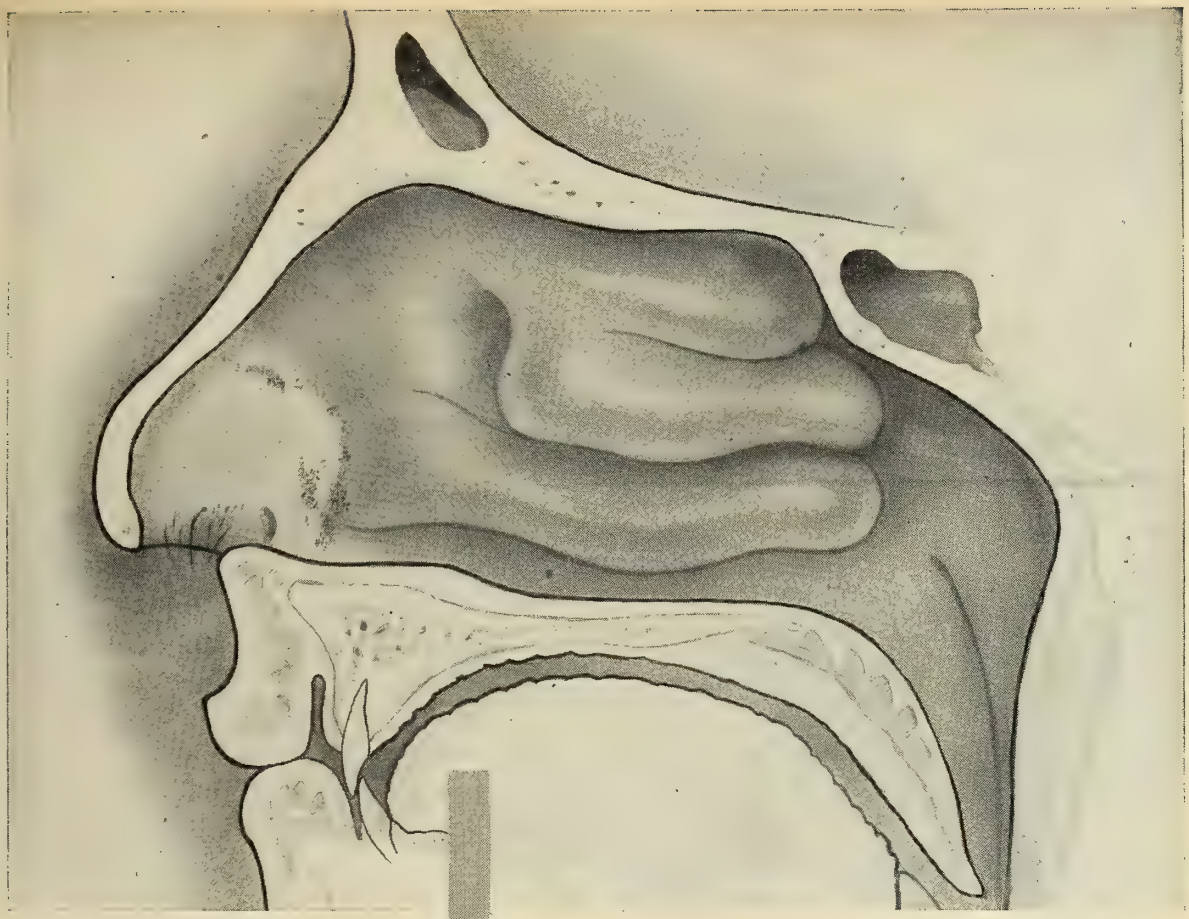
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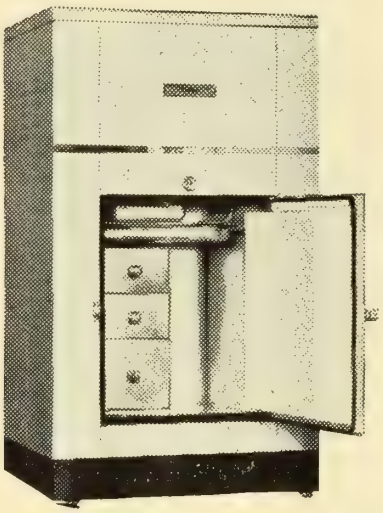
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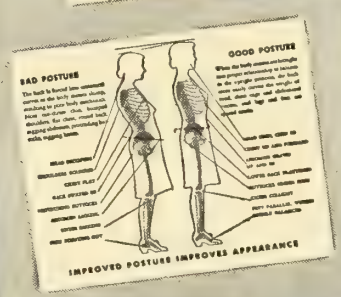
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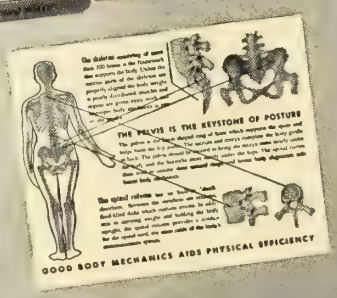
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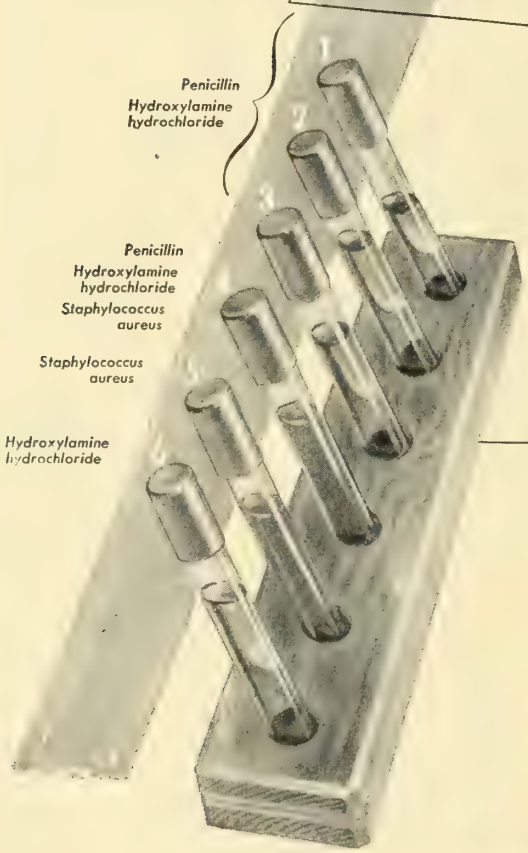
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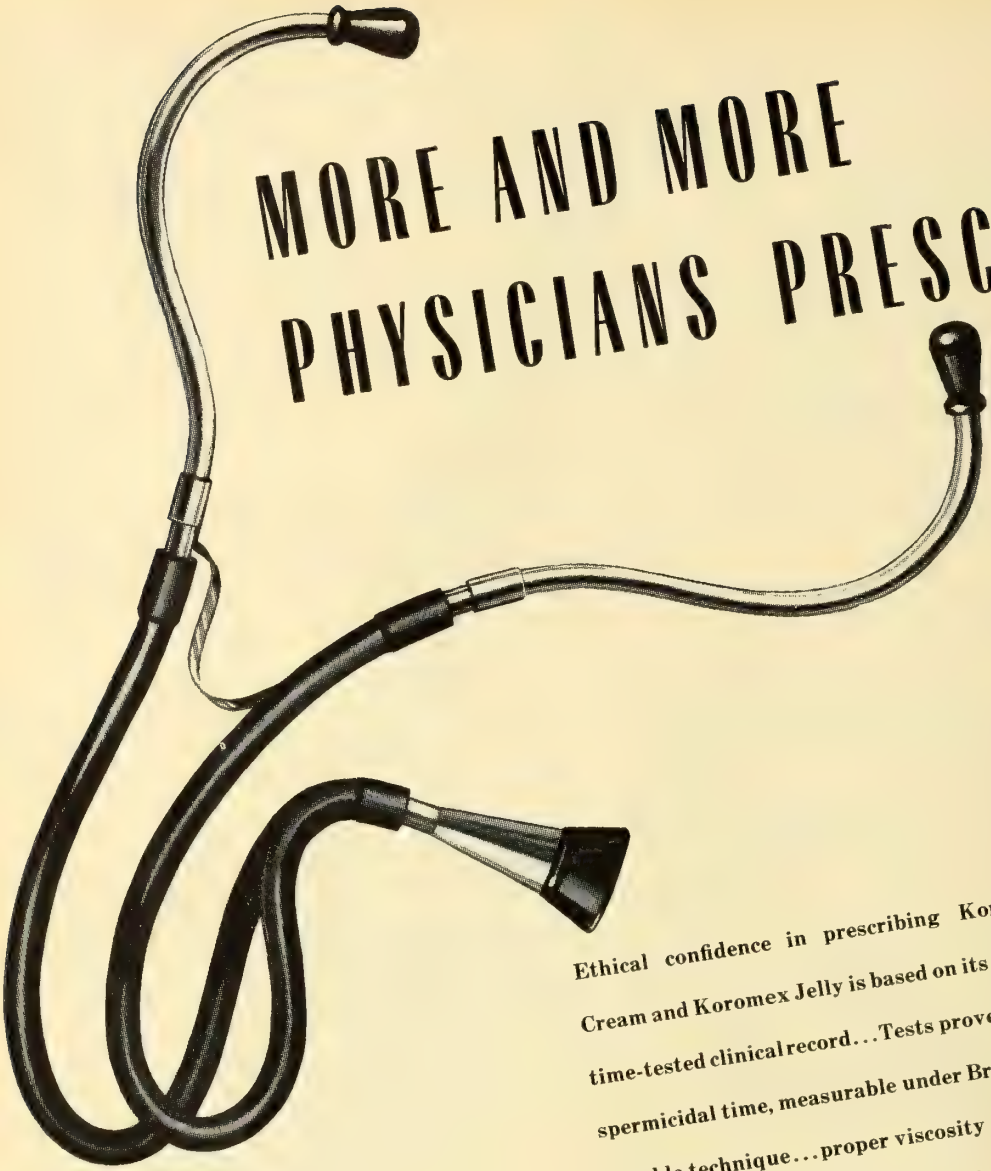
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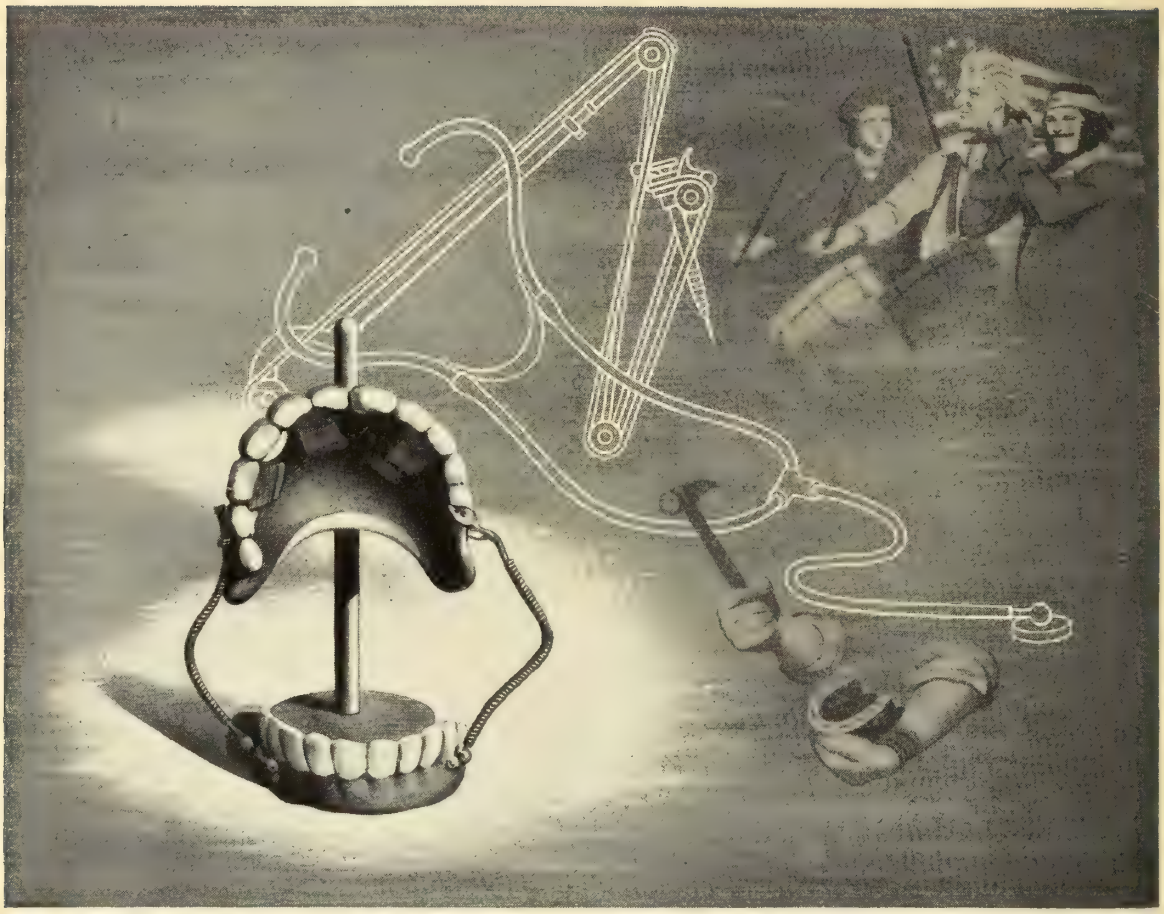
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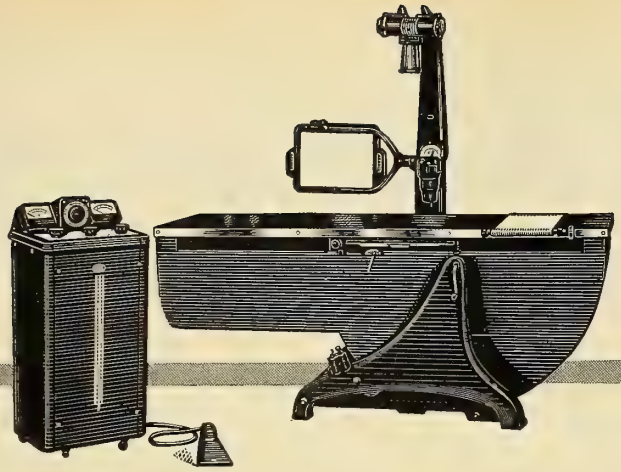
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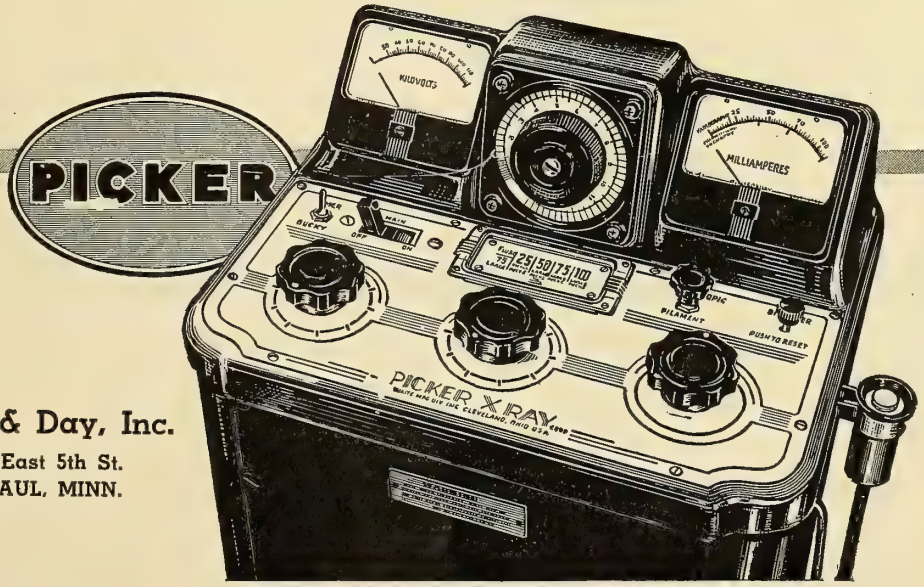
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RECTALGIA ASSOCIATED WITH INTESTINAL DISEASES

Symptomatic Treatment

J. ARNOLD BARGEN, M.D.
Rochester, Minnesota

AMONG the most trying conditions encountered in the management of intestinal disease is the anal discomfort which so frequently occurs as a major complaint. This discomfort is trying not only for the patient but for the physician as well. Frequently the anal condition so overshadows the basic problem that much effort is wasted and valuable time is lost by directing all attention to the local anal discomfort instead of to the more serious and important disease in more proximal segments of the bowel.

However, experience has taught physicians that it is unwise to direct all the attention to the care of the intestinal disease, for the patient's comfort inevitably assumes an important place in the efforts to control a severe infectious intestinal disease or even the unpleasant sensations associated with the irritable bowel syndrome. Both may be associated with very uncomfortable anal tenesmus or other forms of rectalgia. Once the anal discomfort is controlled, or at least ameliorated, the major problem may be attacked more leisurely or at least with greater confidence from the standpoint of both the patient and the physician.

One may actually be surprised to see a severe diarrhea subside or lessen with the control of a patient's anal disorder, albeit this may have little direct bearing on the treatment of the disease causing the diarrhea. It is rarely wise to indulge in any reparative anal surgical procedure in the presence of intestinal disease but the importance of establishing anal comfort sometimes by the most simple means cannot be overrated. The need for control of anal discomfort has often assumed such major proportions that many symptomatic measures have been invoked including hot Sitz baths, anal irrigations and a variety of local medicaments. It has long been known that ethyl aminobenzoate (benzocaine) has a particularly soothing effect when applied to the anal region of these sufferers. The problem of the method of its application, however, has not been easy. When prepared in the form of a rectal suppository, it can be readily inserted by the patient himself. A suppository containing a soothing mixture of benzocaine, oxyquinole sulfate, balsam of Peru and ephedrine hydrochloride in cocoa butter has proved suitable.*

Three groups of patients with as many types of symptoms have been particularly helped by this type of suppository: those patients with the anal tenesmus and rectalgia associated with the irritable bowel syndromes, those with the misery of severe anal infection and those with the diarrhea of infectious intestinal disease. In a group of patients who were afflicted with chronic ulcerative colitis and who had rather severe diarrhea, decrease in the number of stools occurred in at least half the cases after use of this type of suppository. Table I illustrates this change in a small group of patients. Similar results have been obtained in a much larger series of cases.

The following is a report of a series of cases in which is illustrated the nature of the problem for which anal relief was obtained. (The case numbers follow consecutively those in Table I.)

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

*Material used in this study was rectal medicone, supplied by The Medicone Company, 225 Varick Street, New York City, New York.

TABLE I. EFFECT OF RECTAL SUPPOSITORIES ON RECTAL DISCOMFORT IN CHRONIC ULCERATIVE COLITIS WITH RATHER SEVERE DIARRHEA

Case	Suppositories Used, Days	Decrease in Stools in 24 Hours	Rectal Discomfort
1	9	7 to 3	Relieved
2	9	6 to 2	Pain and soreness relieved
3	15	13 to 9	Slight soreness relieved
4	8	8 to 4	Slight soreness. No improvement
5	8	5 to 3	Relieved

Report of Cases

Case 6.—A woman, twenty-five years old, who had had chronic ulcerative colitis for three years with a rectal stricture which had reduced the lumen to about 5 mm., inserted one of the suppositories into her rectum three or four times a day. The patient obtained relief from the burning after stools and then ceased passing two or three small, loose stools after each main stool. She thought the suppositories relaxed the rectum and thus made her more comfortable.

Case 7.—A girl, fourteen years old, had had chronic ulcerative colitis involving the entire colon for two years. The roentgenogram showed more involvement of the mucosa than of the deeper structures of the wall. The disease was not very active but there was tenesmus for an hour after each bowel movement. This discomfort was completely relieved after several insertions of suppositories.

Case 8.—A woman, thirty-six years of age, who, for two years, had had chronic ulcerative colitis which involved the rectum and sigmoid and which was associated with much rectal tenesmus, inserted the suppositories into her rectum. Relief of the discomfort caused by the tenesmus followed promptly.

Case 9.—A man, forty-six years of age, had had chronic ulcerative colitis for six months. The disease involved the rectum and sigmoid severely, with minimal changes in the entire colon. He complained of rectal burning after bowel movement, which was relieved by the suppositories.

Case 10.—A man, thirty-four years of age, who had had chronic ulcerative colitis for ten years, came to the clinic with far-advanced disease, a rectal stricture having reduced the lumen to about 1 cm., and with a fistula in ano. He had a very tender and sore anus. Much of this soreness was relieved by the use of the benzocaine suppositories.

Case 11.—A man, thirty-one years old, who had had regional enteritis for six years, came to the clinic with a history of having had a hemorrhoidectomy in 1932, an operation for a fistula in ano in 1937, a right hemicolectomy and resection of the ileum for regional enteritis in 1941, an operation for two fistulas of the rectum in 1942 and an operation for a fistula of the rectum in 1946. Examination showed an inflammatory process of the rectum which extended as far as the proctoscope could be introduced. There was stricturing of the rectum which had reduced the lumen to 1.5 cm. at a point 6 cm. from the anus. There was a subacute abscess and a draining sinus in the perineum. Roentgenologic studies revealed, at the site of anastomosis, recurrent enteritis associated with an inflammatory process in the colon. The patient's anorectal discomfort was almost unbearable. He obtained great relief by insertion of a suppository after each bowel movement.

Case 12.—A man, forty-six years old, who had had a severe diarrhea for seven years, came to the clinic for examination. A segmental colitis of the ascending and transverse colon was found and a proctoscopic examination revealed anal ulceration. The bowel seemed to be normal between the anus and midpart of the transverse colon. The anus was tender and painful. The patient became comfortable after using the suppositories for six days, one after each bowel movement, of which he had five daily.

Case 13.—A woman, forty years of age, came with the complaints of an irritable colon with which she had been troubled for six years. Her discomfort had been aggravated by a hemorrhoidectomy. She complained of a pressure sensation in the rectum which had been getting gradually worse. Insertion of the suppositories into the rectum after bowel movements resulted in complete relief of this symptom.

Any relief from medication of this type is purely symptomatic. However, it becomes much easier for the physician to control the other more serious lesion after the patient's suffering from anal discomfort has been wholly or partly relieved.

There may be other substances the use of which will result in similar relief. In this study, ethyl aminobenzoate (benzocaine) in a suitable formula in the form of a suppository has been of striking help in allaying anal discomfort. It is likely that patients with other painful anal conditions might be benefited by the use of such a suppository.

PROCTOLOGY AND THE GENERAL PRACTITIONER

WILLIAM C. BERNSTEIN, M.D.
Saint Paul, Minnesota

UPON my return to civilian practice after three years in the armed services, I was struck by the fact that a great many general practitioners were fearful that the present trends in medicine would limit the field of usefulness and activity of the general practitioner. I feel that I have been on the scene long enough now to evaluate and to attempt to clarify the situation insofar as the specialty of proctology is concerned.

Although proctology is one of the newer and younger specialties, it is already apparent that as knowledge and experience are accumulated, the field of activity of both the general practitioner and the specialist is rapidly widening. We are aware that a very large percentage of patients have symptoms referable to the lower gastrointestinal tract; since approximately 4 per cent of adults harbor precancerous adenomata or polyps in their rectum and colon, and since approximately 15 per cent of all cancer occurs in the rectum and colon, it is apparent that herein lies a very fertile field for action on the part of both general practitioner and proctologist. We need but take an active and sincere interest in patients with symptoms referable to the lower gastrointestinal tract and we will find that our field of usefulness will be greatly increased.

I believe that it is well to survey the situation as it exists today. Every large city and many small ones have advertising doctors who prey upon persons afflicted with anal, rectal and colonic complaints. These irregulars enjoy very large and lucrative practices despite the fact that their work is very mediocre or, in fact, very poor. Why, then, do the patients continue to patronize them? To my mind it is apparent that so many physicians are content or feel inclined to dispose of their rectal patients with nothing but a very cursery examination and a prescription for one of the many over-advertised suppositories or ointments, that the patients shop around until they find a doctor who makes an outward appearance at least of real interest in rectal or bowel disorders.

If we were to limit this discussion to the subject of constipation alone, we would be dealing with a condition that probably afflicts more people than all other diseases put together. The proceeds from the sale of laxatives and cathartics in this country are greater than those from cosmetics and far in excess of the proceeds from the sale of any other medicine. Still, we as a profession are doing very little about it. The study of all constipated persons who come to us for help would uncover many pathologic conditions, including cancer, and the application of intelligent treatment would improve the health and minds of many of these patients who are spending their lives in relative invalidism. It is in this direction that many of us should bend our efforts in the future.

Certainly it is to the general practitioner or family doctor that most patients go with their early symptoms. The general practitioner is in the very best position, therefore, to provide early and effective service in preventive medicine, cancer detection and treatment of early lesions. His field of usefulness need be limited only by his knowledge and experience.

The family physician is also the one on whom most families depend for advice and counsel when a member of the family learns that he has a cancer of the bowel and will need a radical operation with or without the establishment of a colostomy. Upon the moral support of the family physician depends the entire future mental comfort of the patient. Most physicians have had experience in the care of patients with colostomies and know that an intelligent patient need not be handicapped to any great extent by an artificial anus. The family physician should be the one to inform the patient and his relatives that the average patient with a colostomy usually becomes adjusted to his new life in a short period of time and learns how to take care of himself without the use of bags, diaphragms, plugs or other appliances. Once a patient learns from his own medical counsellor that, with a colostomy, his bowel can be trained to empty once or twice a day and remain clean the rest of the day, he is in a much better frame of mind to accept his new lot. It is indeed unfortunate when the family physi-

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cian informs the patient that a colostomy is a rather horrible substitute for a normal anus and that it should be avoided at all costs. Needless to say, no conscientious surgeon would advise the establishment of a permanent artificial anus if he did not feel that it was an absolute necessity in ridding the body of a malignant growth. Patients with artificial openings, either colostomies or ileostomies, require more or less constant medical supervision. They can be handled well by the general practitioner who manifests an interest in their problems.

Most patients who are operated upon for cancer of the rectum and colon have had symptoms for more than ten months. They have been treated with suppositories and internal medications and have had hemorrhoidectomies and other rectal operations. We know, of course, that it would be much better for these patients if a thorough and adequate workup were to be done early rather than late in the course of their disease. Proctoscopic and sigmoidoscopic examinations should be available for all patients who present themselves with early symptoms referable to the lower gastrointestinal tract. No longer is the digital rectal examination considered an adequate rectal investigation. Only by means of a well-conducted proctosigmoidoscopic examination of the rectum and lower sigmoid regions can early lesions of these parts be ruled in or out. There are many general practitioners who are now doing excellent proctosigmoidoscopic examinations. The technique is not too difficult to master, but inasmuch as there are some tragic hazards connected with the procedure, one should become thoroughly familiar with the technique before subjecting the patient to this examination. Once one becomes familiar with the appearance of the normal rectum and sigmoid colon, a new world of pathology unfolds itself. One can learn to recognize such lesions as early neoplasms, ulcerative colitis, multiple polyposis, amebic dysentery, bacillary dysentery, lymphopathea venerea and numerous other bowel conditions.

The use of the x-ray in examinations of the lower gastrointestinal tract is well recognized by all physicians. I feel, however, that there are two points in this connection which should be emphasized. The first is that the barium enema examination should be used much more frequently and earlier in the course of the patient's illness than is generally practiced today, and the second is that the interpretation of a barium enema examination requires much training and experience. I feel that too many persons entirely unprepared to make this interpretation are attempting to examine these patients and are missing many early lesions. The fluoroscopic phase of a colon examination, in particular, should be performed by a well-trained roentgenologist. If a patient receives a negative report of his barium enema examination when, in fact, he has an early lesion in his colon, he may well have lost his one and only chance for early and complete cure of his cancer.

The diagnosis of the common anorectal conditions, such as hemorrhoids, fissures, abscesses and fistulas, is not difficult. These diseases are usually accompanied by either pain, bleeding, discharge or some type of protrusion or swelling. Every patient should be given the benefit of a well-taken history and thorough examination. The practice of having a patient bend over and "spread his cheeks," as was practiced in so many of the army and navy examinations, can no longer be condoned. I am happy to say that, in many centers, this type of examination has been replaced by adequate anoscopic and proctosigmoidoscopic visualization of the parts. In the group of conditions just mentioned, the general practitioner should be able to diagnose and treat all but the difficult or complicated ones.

I wish to mention specifically one disease, to make clear the point that there is much room for greater activity in the field of proctology. One of the most common complaints that is presented to either the general practitioner or proctologist is itching about the anus. In my own practice, one out of every four patients has pruritus as one of his chief complaints. The average physician seems to be afflicted with the same feeling of despair that most patients have concerning this condition. I do not share this feeling. Although the etiologic factors concerned in pruritus ani are numerous, it is possible after a well-taken history and examination to learn much about the cause in many patients. Personal hygiene, perianal infection (anal fissures, infected anal crypts, hemorrhoids, fistulas, et cetera), fungus infections, allergic reactions and psychic disturbances all play important roles in this disease. Once the cause is determined and the treatment applied, the patient may obtain gratifying relief. Only in a relatively small percentage of cases is it necessary to use

(Continued on Page 368)

DIVERTICULITIS OF THE COLON

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Rochester, Minnesota

DIVERTICULA may arise along the entire length of the gastrointestinal tract and may be classified as either true or acquired diverticula. The so-called true or congenital diverticulum contains all the intestinal layers in their normal relationships. Meckel's diverticulum of the ileum is an example of this type. My discussion today is concerned with acquired diverticula. In this type of diverticulum the sac of mucosa has herniated through the wall of the intestine, and the muscular layers cover only a portion of the diverticulum and are relatively thick near the base of the pouch but sparse over the apex. Generally, the mouth of the sac which opens into the lumen of the intestine is small in relation to the remainder of the sac. The occurrence of one or more than one sac in the large intestine often is spoken of as diverticulosis. When these sacs are involved in an inflammatory process the diagnosis of diverticulitis is made.

Etiology

Many theories have been devised to explain the manner in which diverticula appear in later life. The most commonly mentioned of these is concerned with herniation of intestinal mucosa near the points of entry and exit of the blood vessels and lymphatics along the mesenteric border of the bowel. Contradictory to this theory is the fact that these saclike outpouchings also occur along the antimesenteric border and the lateral walls of the colon. It has been proposed that other factors, such as increased intracolonic pressure, the process of atrophy in the musculature of the aging intestinal wall and localized changes in the resisting power of the wall, may account for the formation of diverticula in any part of the colon. Henderson has suggested that diverticula appear during or after an attack of inflammation in a section of the colon and it is this initial inflammatory attack, or series of attacks, which constitute a mechanism that brings about weakening of the wall. As a result of his personal observations at operation and in roentgenograms, Erdmann considered that these diverticula are of congenital origin though some may be acquired. Fansler stated that diverticula appear more frequently along the antimesenteric border, and that as a consequence of degenerative changes muscular weakness develops. Trauma caused by hard stools and gaseous distention eventually produces herniation of mucosa through the weakened portion of the intestine and a diverticular sac is thus formed.

Incidence

It is generally agreed that diverticulosis occurs with advancing age. Bargen has found that diverticulosis rarely occurs before the age of thirty-five years and it is estimated that about 95 per cent of the patients are fifty years of age or older. It is frequently stated that obese individuals are more likely to have diverticulosis of the colon than thin persons. The sex incidence varies from equal distribution among males and females, to a preponderance of 4:1 in males, in Erdmann's experience. Young and Young in 1944 compiled statistics from the literature and found diverticulosis in 5.2 per cent of 70,572 colons examined at necropsy or roentgenographically.

Diverticula may appear anywhere in the various segments of the colon. They may be present diffusely along the entire length of the bowel or may occur singly or with gradations between these extremes. They are uncommon in the rectum and are most frequent in the sigmoid and descending colon. Dixon, Deuterman and Weber found that 60 per cent of all diverticula of the gastrointestinal tract are in the sigmoid.

Pathology

Diverticula communicate with the lumen of the intestine and are capable of filling and emptying. When a hardened mass of fecal material occludes the narrow neck of the sac, edema of the mucosa with obstruction to emptying occurs. With retention of the contents and consequent irritation of the mucosa, inflammation occurs and the process of diverticulitis is at hand. From this stage there are several possibilities as to the future course. The inflammation may subside and

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the episode is then over. Should this not occur, one of several conditions may develop.

Bacterial peritonitis may develop from extension without perforation of the inflamed diverticulum. However, this is rare. The inflamed sac may rupture and produce acute peritonitis. The inflammation may spread to involve the intestinal wall and other diverticula and thus produce the condition known as "peridiverticulitis," with narrowing of the lumen of the intestine and eventual obstruction after repeated attacks. A localized abscess may occur as a consequence of the inflamed diverticulum's perforation. Fistulas between the inflamed region and the bladder, the vagina, the abdominal wall or other intestinal segments may develop. Arnheim has collected statistics from cases reported in the literature and has found some significant figures which follow.

Perforation with formation of abscess occurred in 19 per cent and peritonitis in 12 per cent of 834 collected cases. Formation of fistulas occurred in 8 per cent of 1,516 cases; the sigmoidovesical fistula was relatively frequent and more common in diverticulitis than in carcinoma of the sigmoid. Peridiverticulitis with narrowing of the lumen of the intestine and tumefaction occurred in 20 per cent of 1,049 cases. Metastatic suppuration as a complication of diverticulitis is rare and Arnheim found only three cases reported in the literature. Abscesses were reported in the liver, lung, brain and mesenteric, splenic and portal veins in these cases. It is the consensus that carcinoma bears no etiologic relationship to diverticulitis, though the two conditions may coexist.

Rarely do diverticula occur singly in the cecum and ascending colon. When inflammation occurs in such a solitary diverticulum, the process in the right portion of the colon resembles acute appendicitis clinically. At operation it sometimes is mistaken for perforating carcinoma. Its infrequent occurrence is attested by the fact that Carroll in 1943 found only forty-three cases reported in the literature. Abscess with or without perforation was common in the solitary diverticulum, and widespread peritonitis was rare in these cases. When classification into true or acquired diverticula was attempted, he found that the diverticulum in most cases was of the true type, with the normal layers of the colon in normal relationships in the pouch or sac.

That diverticulosis must exist before diverticulitis develops is generally agreed on. However, the incidence of diverticulitis in cases of diverticulosis is not definitely known. Many figures are given in the literature. According to Dixon, Deuterman and Weber, it is generally accepted that in about a fifth of the cases of diverticulosis diverticulitis will develop.

Diagnosis

Since the course of diverticulitis may run the gamut from a single attack of acute diverticulitis through the various situations just described to formation of a fistula, it is readily apparent that the symptoms, and physical and laboratory findings may vary immensely.

When uncomplicated diverticulosis exists, complaints vary from none at all to constipation, diarrhea, cramps, irritability, abdominal pain and occasionally even bleeding per rectum. This variation is so great that the relationship of these complaints to roentgenologic finding of diverticulosis may be questioned. There are no positive physical findings which indicate uncomplicated diverticulosis.

During an attack acute diverticulitis resembles acute appendicitis except that the symptoms are referable to the left lower quadrant of the abdomen. Pain of an intermittent cramping type is the common symptom, and it is usually aggravated by cathartics. Defecation may temporarily relieve the pain. Vomiting may occur. There is tenderness and occasionally rigidity of the left lower quadrant to palpation. There may be fever. Leukocytosis of the order occurring in acute appendicitis may be present but its presence depends on the extent and severity of the attack.

When perforation has occurred, cramping lower abdominal pain usually is present and is associated with chills and fever. Urinary symptoms often are present and consist of dysuria and frequency. A mass may be palpable in the left lower part of the abdomen. Should the process progress, formation of a fistula into the bladder, vagina, other loops of bowel or the abdominal wall may occur. The passage of cloudy urine and gas at the end of urination through the urethra is diagnostic of perforation into the bladder with formation of a fistula. The formation of sigmoidovesical fistula is usually due to diverticulitis rather than to carcinoma. Of fifty cases of sigmoidovesical fistulas studied by Bar-

gen, in thirty-one the fistulas were due to diverticulitis and in nineteen to carcinoma.

In some cases in which repeated attacks of diverticulitis occur or the initial process continues over a long period, the bowel wall in the involved region becomes thickened. Patients with this condition have recurrent bouts of abdominal pain, fever of varying degree, and a change in bowel habits usually toward progressive constipation. A mass may be palpable in the involved region and ultimately obstructive symptoms develop if the condition persists long enough.

The incidence of rectal bleeding in cases of diverticulitis varies greatly according to several authors. It is variously given as 5 to 17 per cent, though Young and Young found blood in the stools in 26 per cent of their eighty-four cases of diverticulitis. No other cause for bleeding could be found in these cases. Rosser, Fansler and others have emphasized that bleeding may occur in association with diverticulitis, while Nash and Palmer stated that in their experience rarely if ever can bleeding be attributed to diverticulosis or diverticulitis.

Special examinations which aid in establishing the diagnosis include sigmoidoscopy and roentgenologic examination of the colon. Sigmoidoscopy may reveal sacculation of the sigmoid and the mouths of the diverticular sacs may be seen. Roentgenologic examination of the colon may manifest a number of findings indicative of the condition. Examination after a barium enema which demonstrates the presence of diverticular sacs is of obvious value. The presence of various roentgenologic signs including serration, narrowing of a long segment of sigmoid with no destruction of the mucosa and obstruction to retrograde flow indicate various stages of diverticulitis to the roentgenologist. Differentiation between diverticulitis and carcinoma of the sigmoid is most often first made by a competent roentgenologist.

Treatment

Treatment of diverticulitis consists principally of medical management; surgical procedures usually are reserved for the complications. When the diagnosis of diverticulosis is made, efforts are advanced to prevent the occurrence of inflammation in the diverticula and consist of institution of a bland, nonconstipating diet and administration of mineral oil. Regular intestinal habits should be cultivated.

The acute attack of simple diverticulitis is best managed by placing the patient at rest in bed. The colon is placed at near rest by providing a liquid diet for the first few days. Heat is of value and may be applied by means of diathermy and hot wet stupes to the abdomen. Rectal instillation of warm oil for retention will supply heat. One of the sulfonamides, such as phthalylsulfathiazole (sulfathaladine), should be administered. The patient should be carefully watched until signs of tenderness over the involved region, usually in the left lower quadrant of the abdomen, subside. After the acute phase has subsided, the program used for management of diverticulosis is resumed gradually.

When the process has progressed to the point of obstruction, the patient receives treatment directed at decompression of the obstructed intestine. Fluids are not given by mouth but are administered parenterally. Heat is applied to the abdomen. With the patient in the knee-chest position, rectal irrigations may be given carefully. Intestinal intubation and suction drainage of the intestine may be needed. When the symptoms of obstruction are controlled, management is as described for the attack of acute diverticulitis. When medical management fails to relieve the obstruction, surgical intervention and colostomy become necessary.

Likewise, when abscess perforates, surgical intervention is necessary, but only after the acute symtoms subside in the majority of cases. Here also preliminary colostomy seems the treatment of choice. As a general rule, it may be stated that the establishment of a colonic stoma indicates the need for later colonic resection of the involved region. Treatment along medical lines before establishment of a colonic stoma should be employed only until the acute symptoms abate and should not be prolonged. This treatment is generally the same as employed in the obstructive type of diverticulitis, with the exception that rectal irrigations should not be used.

Prognosis

After the diagnosis of diverticulosis is made, it seems that progression to diverticulitis might occur less frequently than it does, if proper management were instituted.

The prognosis in cases of uncomplicated diverticulitis is good. Brown[3] and Brown and Marcley,[4] reporting on 1,100 cases of diverticulosis, included data on 99 cases of diverticulitis in which surgical treatment was employed and on 227 cases in which treatment was medical. Sixty-three per cent of the patients treated medically obtained excellent results while the remaining 37 per cent obtained only fair or poor results. However, many patients in the latter group lived fairly comfortably. Of the surgically treated patients, 57 per cent had excellent results.

In Brown and Marcley's series adequate follow-up was available in 192 of a total of 700 cases of diverticulosis. Diverticulitis had occurred in one of 192 cases.

Thus it may be said that the prognosis in cases of diverticulosis is excellent. The prognosis in uncomplicated diverticulitis is good, but the outlook for those patients who have complications of diverticulitis may be serious.

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PROCTOLOGY AND THE GENERAL PRACTITIONER

(Continued from Page 364)

radical treatment in the form of alcohol injections or anal neurectomy. The conscientious general practitioner could well afford to spend much more time with these patients than he does at present. The promiscuous use of suppositories and proprietary ointments in pruritus ani should be condemned. Only an intelligent investigation of the individual patient, with properly applied treatment, can bring satisfaction to both patient and physician.

A word of caution might well be injected at this time. It is extremely easy to be carried away by one's enthusiasm or to become overly optimistic about certain forms of treatment after a few successes. In proctology there are certain procedures which can be done well as ambulatory or office procedures. Each case should be decided upon its own merits, and the physician should not be influenced too far by the patient's desires. The injection treatment of hemorrhoids is a good example. If this treatment is limited to the cases for which it is indicated, good results may be anticipated. If, however, the patient insists on having his hemorrhoids injected, simply because Dr. Brady has stated that the ambulant treatment of hemorrhoids is satisfactory or because some friend has had the injection treatment and liked it, the results will be far from good. The injection treatment of hemorrhoids was never intended to be an adequate treatment for all kinds of hemorrhoids. Similar statements can be made regarding the ambulant treatment of other rectal conditions.

The patient who has suffered from anorectal disease, be it a painful external hemorrhoid or a fistula of long standing, and has obtained relief is the most grateful patient one can find. If the general practitioner would only realize this fact, he would devote much more time and effort to the care of these patients. There need be no cause for alarm that the general practitioner's field of usefulness will be narrowed. In the limited field of proctology alone there is an almost unlimited opportunity for men in general practice to widen their scope of activity in making earlier diagnoses and in treating early lesions. In the long run, the general practitioner will not only better his own professional status but will take away the incentive and necessity for patients to patronize the advertisers and other cultists.

HEMOSTATIC AND ABSORBABLE DRESSINGS IN ANORECTAL SURGERY

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ANORECTAL surgery, of necessity, is carried out in a very vascular field. Any agent which will assist in the control of postoperative bleeding and oozing may well be added to the means at hand. In the past several years, absorbable hemostatic dressings have been placed on the market and have been used fairly extensively in many fields of surgery. Owing to the hemostatic properties and the size of the dressings, they are most adaptable to anorectal procedures. We have been using them for over a year with complete satisfaction and feel that they are worthy of consideration and use.

This report will be limited to a discussion of only one of these products, the one which we have used in some 200 cases of hemorrhoids, anal fissure, fistula, perineal resection and pilonidal disease. This product is a sterile, absorbable oxidized cellulose pad, sold under the name, Oxycel, and manufactured by Parke, Davis and Company. This material was first prepared by Kenyon and his associates,[9,10] in the Eastman Kodak Laboratories, and has been subjected to extensive laboratory investigation to determine possible irritating properties and rate of absorption from various animal tissues. Using a special technique devised for testing various absorbable materials, Frantz et al[3,7] found that implants in connective tissue, muscle, bone, serous and synovial cavities, brain, thyroid, liver, kidney and spleen were completely absorbed in varying lengths of time, depending on the amount of material introduced, extent of operative trauma and amount of blood present. Gruhzit et al[6] have observed the absorption rate of this dressing when implanted in various tissues. These investigators describe the disintegration and absorption in the following manner: "When implanted in tissue or when in contact with tissue fluids or blood, it forms coagulum. In this manner it produces local hemostasis. Following the initial hemostatic effect, it is quickly changed into a dark brown, soft mass, which in turn, becomes jelly-like colloidal material. Subsequently, the jelly-like mass becomes thin, forming a water like, pigmented fluid which either diffuses or is taken up by phagocytosis into the general tissue fluid circulation."

Frantz[4] states that following implantation of the dressing, no appreciable clot forms in the meshes of the gauze. According to Gruhzit,[6] the initial lesion formed at the site of the implantation consists of a multilocular nodule or cyst surrounded by a coagulated tissue membrane. As it becomes lysed and absorbed, the coagulum is surrounded by a zone of fibroblasts and invading large monocytes. Absorption is usually followed by some connective tissue scar formation. Frantz and Lattes[5] observed no acute inflammatory reactions following implantation of the dressing unless there was associated infection or some irritating foreign material present. The only untoward effect noted was when the dressing was implanted in bone. Burns[1] reported that oxidized gauze implanted in the omental bursa of the dog was completely absorbed in approximately twenty-eight days; while a piece the same size when placed among the intestines was completely absorbed in two days. In his opinion, absorption varies with the amount and type of peritoneal fluid present and the mechanical motility of the surrounding tissues.

The specific hemostatic property of oxidized cellulose seems to depend on formation of a coagulum consisting of salts of polyanhydroglucuronic acid and hemoglobin.[5] There is also quite a little swelling when it becomes moist with tissue fluids so that it adapts itself to wound spaces and acts as a packing agent by pressure.[6] These dressings are prepared from gauze by a special oxidation process with nitrogen dioxide which converts the unoxidized cellulose into polyanhydroglucuronic acid which is absorbable and hemostatic. The pad should be used immediately after the glass container is opened and removed with sterile forceps.

As brought out by Rosser,[8] the ideal postoperative anorectal dressing should have the following characteristics:

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1. It should be a true dressing of individual wounds, not a pack or plug.
2. It should permit free drainage of secretions.
3. It should have a hemostatic effect without undue pressure.
4. It should permit the early escape of gas from the bowel.
5. It should be removable without pain.

I feel that the agent being discussed fulfills these criteria for postoperative anorectal wounds, and may be used in pilonidal and perineal wounds with success. It is not a substitute for suture or ligature and is of no use in active arterial bleeding. I like this dressing particularly well in cases of anal fissure, where a deep posterior incision is made with a plastic repair or marsupialization of the skin edges; by this I mean a broad triangular wound with the base outward, towards the coccyx, the skin edges being sutured down to the wound edges, not into the bottom of the incision. Bleeding is controlled by suture, and the dressing, as delivered from the container, is placed snugly in the open wound and through the anal canal. This is a pack of course and partly occludes the anal opening, but not sufficiently to prevent the escape of gas and even soft stool, as evidenced by the fact that many patients have bowel elimination while the pack remains in place. Over this hemostatic dressing in the wound is placed a piece of rubber dam, about 6 inches square, followed by gauze to give pressure, all of which is held in place by adhesive strips and a T binder. The external gauze, rubber dam and binder are removed eight to ten hours following operation and are not replaced. The cellulose pack soon becomes black and appears as a well-organized clot, becoming drier and more friable and smaller each day, some breaking off and being expelled. Owing to the friability, the pack cannot be removed intact. It usually has entirely disappeared in four or five days, during which time the wound has been held open and the edges apart, which is essential to the proper healing of this type of wound. After the pack has entirely disappeared, the wounds are dressed in the regular way, being kept apart and allowed to heal only from the bottom up. Previously used packs of gauze adhered to the wound, causing bleeding and pain when removed, and were most uncomfortable when in place. I feel sure that our fissure patients have been much more comfortable since we have been using these absorbable dressings.

If there are two fissures or ulcers in the anal canal, as is occasionally the case, requiring two incisions, I place the full dressing, as described, in the posterior incision and one half of a dressing in the other, which is usually anterior, followed by the rubber dam pack, et cetera.

With fistulas, the same technique is carried out after the wound has been properly saucerized, with all tracts dissected out and the bleeding controlled. The pack or packs are applied to fill the cavity. They remain in place until the outer dressings are removed or a Sitz bath is taken. Then they become loose and fall out, certainly with the first defacation, unless the wound is quite deep. At times, the packs may have to be removed piece by piece to allow proper healing. I have never noted any complaint when these packs have to be removed, as was the case when dry gauze was used. They are moist, shrunken, friable and do not adhere.

With hemorrhoids, we do a dissection type of procedure, involving four or five linear incisions. This cellulose dressing should be used against the anus, not in the anal canal, and should be covered with a rubber dam, some dry gauze, adhesive tape and binder, as mentioned above. The entire dressing, including the cellulose portion, should be removed in twenty-four hours unless disturbed by an undesired elimination. The cellulose does not adhere to the anal incisions and usually falls off when the outer dressings are removed. We have not had any postoperative bleeding from external hemorrhoidal incisions since using it. An alternative method which is sometimes used, is to cut the dressing into small strips, ½ inch wide and the length of the incision, and place one of these strips against each incision, the rubber dam being placed against these strips with the regular gauze dressing on top, all held in place by tape across the buttocks.

In office cases, where external thromboses are removed including all the vessels down to the sphincter, one small hemostatic strip is placed over the incision, covered with dry gauze and a snug binder.

In many cases of hemorrhoids there is also an accompanying stenosis which requires widening the anal canal by a deep posterior incision. If

this procedure is carried out, the wound resulting is similar to that of a fissure and is treated likewise.

In procedures for pruritus ani, where undercutting of the perianal skin is done through multiple linear incisions, this dressing is used as with hemorrhoids.

In pilonidal wounds, after the cyst has been removed, the base of the wound is packed with the cellulose dressing, which is placed so that overlapping of the skin edges is avoided. Over this, the usual gauze is applied, the wound being left open with the edges marsupialized. The entire pack is left in place until it falls out, or is removed when of no further use in the treatment. This new dressing has been particularly useful in these cases, as there is usually quite a little oozing which cannot be controlled by ligature.

In perineal resections, troublesome oozing is sometimes encountered about the prostate, vesicles and posterior vaginal wall. These packs have been applied directly to these areas, the wound closed, and healing has occurred without any infection.

It is evident that proper use of this new hemostatic dressing will change the usual methods of controlling anal bleeding by packs and pressure. In fact, some proctologists have abandoned the use of any internal dressing in simple anal cases to avoid pain and difficulty in expelling gas. These new dressings offer an almost painless and effective precautionary measure.

In conclusion, it may be said, while meticulous hemostasis is most important, this oxidized cellulose dressing is a valuable addition to present methods.

The dressing is nonirritating, but until in solution it constitutes a foreign body.

The product fulfills the requirements for an ideal postoperative dressing in anorectal cases.

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REPORT ON CANCER DETECTION CENTER

Of the 108 persons, fifty-nine men and forty-nine women, examined in the University of Minnesota's new Cancer Detection Center during the first four weeks of its operation, forty-nine were found to have abnormalities requiring medical attention, Dr. David State, director of the center, reported April 1.

Examinations conducted by University specialists in the detection clinic disclosed, according to Dr. State: one definite case of cancer, twelve suspicious tumors requiring further diagnosis, nineteen pre-cancerous lesions, twenty benign (non-malignant) tumors and thirty non-tumorous conditions such as high blood pressure requiring immediate medical attention.

A large percentage of the forty-nine persons who were referred to their personal physicians for treatment, were found to be suffering from two or even three different conditions requiring medical attention, Dr. State explained.

Detection center doctors found that fifty-nine of the 108 persons examined were in good health and required no treatment. These persons, however, were advised to return to the clinic for physical examinations every six months to keep themselves assured that they are free of cancerous or pre-cancerous conditions.

More than 3,500 applications have been received for admission to the center for examination, Dr. State reported. At the present rate at which the center is able to operate, it will require two years to examine all who have applied.

"If persons who have made appointments desire to be examined before they can be accommodated at the University's Cancer Detection Center," Dr. State advised, "they should visit their personal physicians for a thorough physical check-up."

A project of the University's medical school, the Cancer Detection Clinic is financed in part by the Minnesota state division of the American Cancer society, the National Cancer institute of the United States Public Health service and the University's malignant disease research fund.

The center is open to men and women of Minnesota in the age bracket in which cancer most frequently occurs, forty-five and over, who are without symptoms of cancer. The center is operated on an appointment basis, and examinations are conducted on Tuesdays for women and on Thursdays for men.

A $5.00 registration fee is charged each person who is examined, but if a patient is unable to pay, he is asked to pay as much of the fee as he can.

The Cancer Detection Center is located in a temporary barracks-type building on Church street just west of University Hospitals.

SEROLOGIC OBSERVATIONS IN THE TOXEMIAS OF PREGNANCY

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TWO years ago, before this Academy, in a paper entitled "Serology and Obstetrics," data were presented in support of the hypothesis that the true toxemias of pregnancy are diseases caused by cell substances from the products of conception that are toxic to the cells of the pregnant woman, if they can gain access to her blood. Adequate proof of this causation in each instance demands that one demonstrate in the fetus a cell substance, such as the A, B, Rh substance, et cetera, not possessed by the cells of the mother; and that one demonstrate that the severity of the manifestations of toxemia in the mother varies indirectly with the strength of a demonstrable specific antitoxin in the mother. The proof parallels the nature of proof of disease caused by some bacteria or snake venom.

I have been asked to report any further developments accruing from two more years of work on the subject.

The hypothesis seems to demand a change in our understanding of the significance of blood group composition and cell substance status of human blood. The findings suggest that the inherited agglutinogens and isoagglutinins are not mere static morphological characteristics allowing the differentiation of humans into four groups. They are parts of a larger functional toxin-antitoxin mechanism. The potentially toxic elements are represented by the cell substances such as the A, B, Rh, M, N, et cetera; and the isoagglutinins, inherited or actively generated, represent the agglutinative arms of specific antitoxins, the other arms of the antitoxins being the lytic arms and the opsonic arms. It has long been known that in autopsies, following death from the transfusion of incompatible blood, the cells of the donor are not only agglutinated, but hemolysed and phagocytized. The same linked phenomena have been demonstrated *in vitro*. The phenomena paralleled those long known to occur when certain bacteria are attacked by a specific anititoxin. Obstetrical findings would suggest that a kinship exists between these two sets of parallel phenomena: that they are not strange to each other, as heretofore taught, demanding that we explain blood hemolysis by the presence of inherited unassociated hemolysins, that, however, for some unknown reason, tend to parallel in strength the isoagglutinins, and demanding that we explain the stimulated phagocytosis by the presence of unassociated, so-called hemotropins, that, however, are group specific. The hemolysins, isoagglutinins and so-called hemotropins represent the arms of specific antitoxins as in bacteriology. From the obstetrical findings it would seem logical to assume that the blood group compositions existing in our infinitesimal segment of evolutionary time are the result of the acquired inheritance of complements of antitoxic substances specific against certain cell substances that are toxic to the cells of individuals not containing these cell substances. This inheritance favored survival where the products of conception, due to the bisexual mechanism of human reproduction and under genetic laws, chanced to contain cell substances toxic to that mother.

The right to associate the time-honored isoagglutinin with an antitoxin was immediately challenged. When you suggested that erythroblastosis in the child was likely due to a specific anti-A, anti-B or anti-Rh antitoxin, whose high titer could be proved by titering its agglutinative arm, you were told that this rise in isoagglutinin titer was merely a manifestation of an antibody reaction to the implicated agglutinogen from the child. The isoagglutinin could in no way be associated with an antitoxin, nor could an agglutinogen be associated with a toxin.

The question arose as to what further proof could be devised that would tend to show that we were really dealing with a toxin-antitoxin reaction and that the isoagglutinin represented but the agglutinative arm of a specific antitoxin. It suggested itself that if it were a maternal antitoxin that injured or killed the baby in erythroblastosis or allied injury, then, by analogy and prediction, one should be able to injure or kill a rattlesnake by administering rattlesnake antitoxin to the snake. Here the snake could be considered as an aggregation of cells, as are the products of conception, or an aggregation of specific bacteria, the cells containing the cell substances of their com-

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mon ancester: in the first two instances, the fertilized ovum, and in the last instance, the original bacterium. In collaboration with Dr. W. J. Breckenridge, director of the Natural History Museum of the University of Minnesota, these experiments were consummated, and, as predicted, the vital cells of the snakes were injured histologically and the snakes succumbed. Whatever the value of this work, it is being continued in the reasoned hope that, by analogy, it may throw some light on the question whether such diseases as progressive muscular dystrophy, and many others, may be due to maternal antitoxin action suffered by the fetus during intra-uterine life: that though we may ostensibly save the erythroblastotic child by proper transfusion, basic injury may have been sustained which may manifest itself later in life.

Obstetric and serologic data in relationship to true pregnancy toxemia and erythroblastosis fetalis suggested the assumption that the natural or inherited isoagglutinins, arms of inherited antitoxic substances, had likely gradually become inheritable because their inheritance favored survival of both mother and child and obviously the species, and at the same time made possible the gradual breeding into the species of even toxic cell substances in the inscrutable interests of evolution. It seemed logical from an ontogenic analysis, in point of time of the appearance of the group cell substances in the fetus, in strength sufficient for demonstration, and the appearance of the inherited isoagglutinins, that it must take from eight to many more times longer for a specific antitoxin to become widely inheritable in a species than for the cell substance to become widely incorporated as inheritable. The group substances become demonstrable around the thirty-seventh day of gestation, according to Kemp (this is about the time that nausea usually begins, and that fact may be significant), and the isoagglutinin inheritance does not manifest itself until well after the birth of the child. It seemed from known data that the A substance was likely the first to enter the species, then the B substance, and it was reasoned that the substances comprising the Rh group, and likely many others, had entered the species at a date so late in evolutionary time that enough time has not yet elapsed for their specific antitoxins to become inheritable. This reasoning was similar to that followed by uniformitarianism in geology: in the serologic problem, that the serologic sculpture of the past could be explained by the natural forces, such as are evidenced in the active immunization against the Rh substance and the active increase of immunization against the A and B substances, still operating in the present.

This assumption was immediately challenged. It was said to smack too much of the ideas of Lamarck and Luther Burbank, a rationalization that was completely outmoded. There was no evidence that there was any natural force, environmental or otherwise, that could influence the genes. The A and B substances arose as mutations, and likewise the natural isoagglutinins must have arisen by mutation. Mutation has become a handy, fashionable, time-and-thought-saving hypothesis.

Again in collaboration with Dr. Breckenridge, an attempt was made to throw some light on this rationalization by serologic studies of two well-known snakes.

It is estimated that king snakes and rattlesnakes have lived in juxtaposition for possibly ten million years. That the king snake is today relatively immune to the bite of the rattler is known. It is not a wild assumption that had the king snake not developed a hereditary immunity he would not exist today in rattlesnake environment. The question suggested itself as to whether the invulnerability arose from the situation that a rattlesnake's cell substances might be similar to those of a king snake and thus harmless when injected through its venom. Venom is saliva, likely, from our findings, containing the basic cell substances of the snake, as the saliva of human secretors contains the group cell substances of the individual. Or was the invulnerability due to the king snake having evolved an inheritable antitoxin to the rattlesnake venom? In a measure it was a problem paralleling the bite of the placental villi of a fetus. If the cell substances of the fetus are similar to those of the mother, a true toxemia will not develop. If an O group mother engenders a group A child, by a group A husband, she has a relative immunity due to her complement of inherited anti-A antitoxin.

It was found that both rattlesnake red cells and king snake red cells were agglutinated by rattlesnake antivenom. This was interpreted as showing that both snakes had one or more cell substances in common. This parallels the finding that, in human blood, both group O, Rh positive

cells and group A, B, or AB, Rh positive cells are agglutinated by Rh antitoxins.

Using the same elements for comparison, it was found that the king snake serum agglutinated the red cells of the rattlesnake, but the rattlesnake serum did not agglutinate the red cells of the king snake: just as group O serum will agglutinate the red cells of groups A, B, and AB, but the serum of these three groups will not agglutinate the red cells of group O. Thus the king snake's relative invulnerability would seem to be due to an inherited antitoxin or antitoxins specific against the toxic cell substances in rattlesnake venom. The rattlesnake has not had to evolve antitoxins against the cell substances of the king snake because the king snake is not a venomous snake.

Now if one species can develop a hereditary antitoxin to the cell substances of a different species, it should not do violence to one's reasoning to allow that a hereditary antitoxin can be evolved by a group within a species, a group whose cells are susceptible to toxic cell substances of other groups within the species, especially considering the fetus-mother relationship throughout pregnancy.

If the inheritance of cell substances and specific antitoxic substances are dependent upon genes, and all evidence so indicates, then new inheritable substances and antitoxic substances must depend on a change in the genes. It is an opinion that when we call a new substance or feature a mutation, as the term is generally understood and used, we are ignoring forces that have long been operating from the immediate and possibly the connected environment. When the manifestations of the consequences of this change become perceptible to our senses, we call it a mutation. But it is a gradual evolution, most of which is not demonstrable. The presence of inherited specific antitoxins in human blood seems to me to give a clue to some of the forces that change genes. It is an opinion that an anti-A or an anti-B inheritable antitoxic substance would never have appeared in human blood had the genes from which they stem not been gradually influenced in some way either by the circulating A or B substances or by the gradual and desultory impact of actively generated antitoxins.

For the obstetrician, both in practice and theory, the advantages of an understanding of the fetal cell substances hypothesis of the causation of the true toxemias of pregnancy is of great everyday value. It seems to permit one, by analyzing the cell substance status of husband and wife, to predict more accurately whether or not she is likely or not likely to develop a true toxemia. Similar cell substances in husband and wife is the most auspicious setup. The cases warranting especial supervision are those in which the husband's cells contain a cell substance or cell substances not possessed by the wife. The adequate proof of a fetal cell substance toxemia permits one to render a more reasoned prognosis as to the possible safety of a future pregnancy. A group O, Rh positive woman, for example, may have an almost fatal toxemia with a group A Rh positive child and later have many pregnancies with group O children without a sign of toxemia. Furthermore, if she develops a high antitoxin titer or relative immunity in her first A cell substance toxemia and again becomes pregnant with an A group child before her antitoxin titer or relative immunity has much diminished in strength, she may show few or no signs of toxemia. This acquired high relative immunity likely accounts for the statistical finding that true toxemia is less frequent in multiparas than in primiparas. It furnishes a probable answer to the question of why a woman may show severe manifestations of toxemia when she begins to absorb a dead fetus or may almost completely absorb the products of conception without a subjective or objective sign of toxemia. Other things being equal, the difference depends upon whether the cell substances of the products of conception are toxic or nontoxic to the mother. To those of us who long believed from clinical findings that the absorption of autolyzing placental infarcts were the primary cause of true late toxemia, it suggests that the toxin-antitoxin battle at the front line, the placenta, is the cause of the distinctive infarcts. Their autolysis, at least theoretically and logically, should increase the toxemia by liberating large quantities of the involved toxic fetal cell substance or substances.

The main importance of this hypothesis lies in the clear direction that it gives to the development of specific antitoxins, to be used, in the interests of the mother, either after the intrapartum death of the child in an adequately proven true toxemia, or after the delivery of a live child, or in postpartum eclampsia. It is true that the more widespread and increased attention to prenatal care and to early and meticulous rational empiric

treatment has appreciably reduced the frequency of eclampsia and, in general, reduced the morbidity and mortality of pregnancy toxemia; yet the fact remains that, at times, the earliest and most meticulous application of the most rational treatment is unsuccessful and might logically be bettered if specific antitoxins were available for use in the type of cases under discussion.

Discussion

Dr. L. W. Barry, Saint Paul: This is quite a profound subject. I should like to ask a few questions. Have you used any antibodies in the treatment of these cases? Have you worked out the blood grouping and titer in all of these cases? What is the mechanism underlying the mutations which you mention? Is the production of the antibodies described a protective mechanism on the part of the mother or child, or both?

Dr. E. F. Robb, Minneapolis: Dr. La Vake has certainly given us something to think about this evening. Three years ago the Rh question seemed to be something rather simple, but as time has gone on, many more factors have been introduced into the subject, and I, personally, am very much confused about it. Perhaps Dr. La Vake is about twenty years ahead of us now. Also, it seems to me that there might be a possibility that the Rh factor may have a part in some of the poorly understood diseases that we see today, namely, nephrosis, leukemia, et cetera. Certainly, Dr. La Vake's paper has been most enjoyable.

Dr. La Vake, in closing: In answer to Dr. Barry, it must be emphasized that we are discussing only cases considered to have been adequately proven. For example, an O group Rh positive woman with a group A Rh positive husband, begins to develop signs of toxemia; the expectant mother's anti-A and anti-B antitoxins are titered and it is found that the anti-B antitoxin titer remains stable while the anti-A titer begins to fluctuate or is above normal. In such cases, one can predict with a high degree of accuracy that the child belongs to group A. After delivery, the mother's anti-A antitoxin will tend to accumulate and its titer will rise. The faster and higher it rises, the more rapidly will the signs of toxemia in the mother recede. The titer will rise sometimes six or more dilutions. The pattern of recession of signs of toxemia parallels the pattern of recession of signs of injury observed after giving rattlesnake antitoxin to a subject of rattlesnake bite. This elevation of titer gradually subsides, but if it is still relatively high when this mother bears another group A child, the mother may manifest few or no signs of toxemia. This acquired relatively high immunity likely accounts for the statistical finding that toxemia is less frequent in multiparas than in primiparas.

At present, the practical importance of these investigations lies in their value in segregating cases most likely to develop toxemia and in prognosticating the safety of chancing future pregnancies. Their main importance would seem to lie in the clear and logical direction that they give to the possible development of specific antitoxins that may be used in the interests of the mother after the intrapartum death of the child in toxemia, or after the delivery of a live child, and especially in eclampsia. In 1926, McMahan reported, in a series of ten cases, a high percentage of improvement when treating toxemic patients with the sera of women who had just recovered from a toxemia. At that time no explanation could be given for the improvement, nor for the failures. Data now at hand would indicate that we are dealing with a toxin-antitoxin mechanism, and that to be helpful the serum must contain the antitoxin specific to the cell substance antigen involved.

In regard to pediatrics and Dr. Robb's discussion, it has long been held that one may use blood of any group in transfusing newborns because in the early months the hereditary isoagglutinins have either not yet appeared or are so weak that there is no fear of agglutination. This is true from the standpoint of the immediate danger of agglutination. However, if the findings under discussion have any directive significance, it would seem unwise, except in emergency, to give an O group infant either A, B or AB blood. This because of their possible, even subclinical, toxic effect. Where possible, blood of the infant's own group should be given. Many cases have been reported of disease reactions resulting even from the intramuscular injection of incompatible blood. Such reactions can be logically explained only if one accepts the hypothesis that such blood is potentially toxic to that individual.

Again, assuming that the fetal injury observed in erythroblastosis and allied conditions is the result of the action of maternal antitoxins during intra-uterine life, it would suggest that many early degenerative diseases, such as progressive muscular dystrophy, et cetera, may stem from the permanent underlying injury to fetal cells sustained during pregnancy. There is clinical evidence that not only can maternal antitoxins injure the fetus, but that, as fetal cell substances can injure maternal cells, so, at times, maternal cell substances may injure fetal cells.

INFLUENZAL MENINGITIS TREATED BETTER WITHOUT SPINAL PUNCTURE

Recovery from influenzal meningitis is more prompt and complications are fewer when treatment by spinal puncture is omitted, according to Archibald L. Hoyne, M.D., and Rowine Hayes Brown. M.D., in the February 28 issue of *The Journal of the AMA.*

Rare in adults, the influenzal meningitis was formerly almost universally fatal. The sulfonamide compounds, specific anti-influenzal serum and streptomycin have all made the picture more optimistic, but even today there is no standard accepted for their application. Many doctors still believe that numerous spinal taps for drainage are necessary even after diagnosis has been established by spinal tap. Furthermore, when the National Research Council released streptomycin for treatment it advised that the new antibiotic be injected by spinal puncture.

The authors' conclusion is based on a dozen years of experience in the treatment of meningitis. In their article they report specifically on fourteen consecutive patients with influenzal meningitis treated at the Cook County Hospital in 1946 and 1947 and sixteen consecutive patients treated at the Chicago Municipal Hospital in 1946. There was only one death in each group, and in both of the fatal cases the patients had been given streptomycin by spinal puncture as well as intramuscularly. On the other hand, twenty-three of the twenty-eight patients who recovered had received no treatment by spinal puncture after diagnosis. These twenty-three had been given streptomycin intramuscularly, had been treated with serum, or had received sulfonamide compounds—sometimes all three.

THREE MONTHS IN A STATE MENTAL HOSPITAL

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SENSATIONAL articles regarding the shortcomings of mental hospitals have been appearing here and there in various magazines during the past four or five years. Quite a number of them do not seem to me to be entirely unbiased, but rather to be attempts, by emphasizing defects and magnifying distressing situations, to produce an altogether unfavorable impression.

Undoubtedly, mental hospitals have been handicapped and hampered in various ways, especially during the war and in these postwar days of high prices and high wages. They have been overcrowded, and replacements of certain old and unsanitary buildings have been impossible. It has been difficult to secure reliable personnel including physicians, because of the failure of legislatures to provide increased salaries and wages and more attractive living accommodations to compete with the inducements for outside employment.

The public should be aroused to the crying needs of the hospitals, but not by misrepresentation of facts or unfair criticism of conscientious and capable public servants who are carrying on a most important work under very difficult circumstances. The ethics of such exaggerations, even for the purpose of improving conditions, are open to question.

We are fortunate in Duluth in being located near the new and well-equipped state hospital for mental diseases at Moose Lake, which was first ready for occupancy in 1938. The site was well chosen. It is on a large level tract of land, comprising several hundred acres, just south of Moose Lake and only a mile and a half from the village of Moose Lake. The hospital has had the advantage of careful planning in advance and is not the result of gradual growth.

The main building and the three-story brick cottages are attractive and dignified architecturally and are connected by sunny corridors above ground. The pleasant entrance, comfortably furnished lobby and attractive offices give the newcomer a pleasant first impression. The color schemes and the plants and pictures used in the interior decoration of the halls and corridors are restful to the eyes. Soothing and carefully selected music is often heard in the halls. Close by are a beauty shop for women patients, a barber shop for the men, occupational therapy rooms, a store, in fact, many of the facilities found in a small village.

I had been aware of all this from previous visits to Moose Lake, but in January, 1947, I decided to see for myself just what was going on in the wards and private rooms. I knew that the superintendent had had difficulty in securing sufficient physicians, so I applied for a position as an untrained assistant for a period of three months. I hoped during this time to add a little to my very limited knowledge of mental diseases.

When I began my work on January 17, the institution was not overcrowded. It has a capacity of 1,000 beds, and the daily census during my stay was usually under 980.

In the main building are two admission divisions, one for men and one for women. These are located on the second floor and have accommodations for about sixty-five patients in small wards and private rooms. There is also a sitting room, dining room, really adequate toilet facilities, and an office. The corridors have linoleum floors, and the wards and private rooms terrazo flooring. They are easily kept clean, and there was no pronounced or disagreeable hospital order. All rooms were usually well lighted, heated and ventilated.

Patients are admitted on court order or as voluntary patients. A large proportion come from St. Louis County, others from Pine, Carlton, Itasca and Koochiching counties.

Both voluntary and committed patients enter the same divisions and receive similar care.

If in need of special medical attention and nursing, new patients are at once transferred to the hospital divisions on the fourth floor. Otherwise, after being seen by a physician, they receive routine care until the physical and mental examinations are completed. During this period the patient remains at rest, usually in bed, in a small ward or private room under the supervision of the physician in charge of the division, and

Read before the medical staff of St. Mary's Hospital, Duluth, Minnesota, September 4, 1947.

in the immediate care of the nurses and attendants.

Included in the staff at present are two physicians in addition to the superintendent and the first assistant, both of whom are experienced psychiatrists. They make the mental examinations and mental diagnoses.

The number of cases requiring emergency care or needing close hospital supervision varies from day to day. Under ordinary circumstances there would not be more than about twenty. Daily charts with temperature records, laboratory tests, x-ray findings, record of treatments given, physicians' and nurses' notes are kept up for them just as in a good general hospital. Penicillin and sulfonamides are freely used; blood levels are determined; intravenous infusions and blood transfusions are used as indicated.

The family is kept informed as to the seriously ill patient's condition, and provision is made for relatives remaining with the patient.

The nursing is done under the supervision of graduate registered nurses assisted by student nurses from various well-known hospitals who are receiving their three months of training in the care of mental cases. The graduate nurses also have the help of competent men and women attendants, some of whom have had special training or experience in the army or navy. Many of them are young married people and have homes in Moose Lake or vicinity.

I saw very little evidence of unkindness or inconsiderate treatment on the part of attendants. Any bruise of any kind must be at once reported to the main office, to the attending physician and to the superintendent, and an immediate investigation is made. Any attendant found treating patients harshly is promptly discharged.

A large proportion of the hospital patients are old people suffering from senile mental deterioration. Many of them have incontinence of urine and feces. Practically no homes and few hospitals are equipped to give such patients adequate care. They have to be lifted frequently and the linen has to be changed if they are to be kept comfortable and free from bed sores. This cannot be accomplished readily unless strong male attendants are available. In a private home, even if three trained nurses are employed in twenty-four hours, this is not always easy or possible, but it is part of the routine care at the state hospital.

There is a profusion of clean linen, and the change is made as often as the patient becomes soiled.

The food is abundant, of excellent quality, and is served as hot as possible from electrically heated carts which come from the main kitchen. Special diets for diabetics and other patients requiring them are provided upon doctor's orders.

One of the physicians is on call at night.

Besides visiting his hospital bed patients, the assistant physician must make daily rounds in the cottages where ambulant patients sleep. In one of these cottages on the men's side of the institution are about 125 patients who, while in fairly good general physical condition and able to be up and about, are not improving mentally and whose prognosis is not good.

In another cottage are about the same number of men whose outlook is more hopeful. Most of them are employed in the institution in various capacities.

There are two similar buildings on the women's side.

In conference with the nurses and attendants in charge, the physicians see patients in need of first aid or other medical attention. Clinics are held several times each week, to which the ambulant patients are referred for special attention. On Monday, the physician acts as a chiropodist or pedicure and also treats minor ailments or injuries. On Tuesday, new patients are vaccinated, given Mantoux tests, and anti-typhoid injections. Blood is secured for the routine Wassermann test. An x-ray of the chest is taken. All these procedures are for the protection of the patients themselves as well as employes. On another day a gynecological clinic is held.

In the meantime, courses of lectures are given to the student nurses, and regular mental conferences are held at which they are present.

Quite a complete variety of mental disorders are encountered.

The classification used is one which was developed in state mental hospitals and is included in the *Standard Nomenclature of Disease*. Its main subdivision of psychoses are those due to infection, to intoxication, to trauma, to disturbance of circulation, to convulsive disorders, to disturbances of metabolism, to disturbances of growth, nutrition or endocrine function, and to new growths.

I was interested to learn that mania, dementia

precox and paranoia are not clearly defined diseases in themselves, and that they cannot be attributed to definite tangible causes or structural changes. They are conditions or mental states which may or may not be present in various mental diseases.

Besides the psychotics, there were always patients who were in the hospital because of psychoneuroses which had rendered them antisocial. Quite a number of the young men had psychopathic personalities and had been committed for various sexual offenses. Some had been in the army or navy. In ordinary conversation with them, they seemed rational and intelligent enough. Perhaps they should not be sent in such large numbers to a state mental hospital. They are not wanted in the reform schools or state prisons.

The more excited and destructive patients were in the second floor divisions in the main building. All the windows in all buildings were well screened to prevent accidents and escapes. The doors leading to each of the main divisions and the cottages were kept locked. I had keys to all the wards, and as my duties took me to all of the men's divisions, I at first entered them with some trepidation but soon found that little effort was made by most of the patients to escape or to become unmanageable.

There are few conspiracies or attempts at concerted action. The patient is usually so self-centered and concerned with his own troubles that he pays little attention to the plans or movements of others.

After a few days I realized I was just living in a rather normal community. My fellow citizens were going about their own business but often gave me a friendly greeting. Some of them seemed a little peculiar, but I had met unreasonable folks before in Duluth and elsewhere.

Normal community life has therapeutic value for these mental patients and is promoted for this reason.

Religious services, community singing, patients' dances, amateur theatricals, ball games, movies, entertainments by local talent, and others provided by the University, are all included in "social activities." Attendance is a prized privilege and an incentive to good behavior.

The almost normal social life possible for many patients is rarely mentioned in articles criticizing mental institutions. To take advantage of it, one must of course be a reasonably good citizen or individual, and it is the purpose of all the treatment to transform the antisocial person into one who can safely be returned to his home environment.

Few persons regain mental stability unless they actually want to. Large numbers have never had it. Inheritance and environment and lack of early training have conspired to prevent normal mental development. The late Clifford Beers,[1] founder of the National Mental Hygiene movement, while he decried the inadequacies of mental hospitals, both public and private, in which he suffered much before he returned to his senses, and wrote his book, recognized that reforms in the hospitals were not the whole answer to the problem. In his work he had the co-operation of many institutional superintendents, and first and foremost, of Adolph Meyer, the dean of American psychiatrists.

The goal in the treatment of the individual patient is to get him to understand himself and control his emotional and volitional faculties. When their situation is fully realized, some patients can be influenced to take the proper steps to remedy their shortcomings. This, I understand, is the purpose of psychoanalysis and other forms of psychotherapy.

Aggravated cases are incorrigibly egocentric. The catatonic schizophrenic is content to let the rest of the world go by. He will stand rigidly all day long in one position, ignoring passers-by and seemingly taking a smug satisfaction in being self-sufficient. He has withdrawn or has escaped into a dream world of his own. Sometimes he can be shaken out of his lethargy for a time by shock treatment, but relapses are frequent.

Occupational therapy had its orgin in mental hospitals. In its broader sense it includes many of the activities carried on there.

To keep a patient constantly interested and occupied, so that he will have practically no time for morbid thoughts, is often a real problem. One important daily activity is eating, and the serving of well-cooked, warm and appetizing meals is an essential form of occupational therapy.

Simple tasks assigned to the patient soon after admission create interest which is still further developed as the patient becomes capable of assuming responsibility.

The men at Moose Lake at first help to polish floors, then to serve meals in the ward. They

assist in dressing and in caring for helpless patients, doing this under supervision. Later they are promoted to the cottages and help in the bakery, the laundry, and the power house, in work on the grounds or on the farm.

Large groups go in the morning and afternoon to the men's occupational therapy shop and do woodwork and painting, making very attractive and salable toys. Women patients help to keep their rooms and wards clean and do other work under the direction of the nurses. If found to be dependable, they serve food in the wards and in the employes' and staff dining rooms. They hem linens, mend worn garments, sort clothes, work in the laundry or sewing rooms and in the occupational therapy shops, where they cut, sew, dye and weave rags into rugs, make dolls' and children's clothes, do embroidery and tatting, and knit.

In many cases, hand work gives an outlet for repressed energy. To many patients, it might well be said, "Your cure lies in your own hands." Some patients write letters, stories or poems. Reading is encouraged, and there are libraries well stocked with books and magazines for the fairly large number of patients who will benefit from their perusal. The *Lakeside News*, a weekly mimeographed sheet, is very popular.

Of course, there are depressed patients and others with delusions, whose interest, for the time being at least, cannot be aroused by work or reading or any other form of occupational therapy. Some of them are helped by shock therapy or the specific treatment of an underlying disease, syphilis for example. There are always a considerable number of deteriorated or senile patients who need only to be made as comfortable as possible.

The possible percentage of cures or of improvement in mental health cannot be secured if the patients are considered merely as groups. They must also be treated as individuals, each having their own mental trends and complexes. Nearly all are benefited to some extent by any special interest shown in them on the part of the staff and attendants.

Beside the psychosomatic treatment, which naturally has a large part to play in the care of patients in a mental hospital, there are certain physical and medical agents which are used to advantage.

Hydrotherapy was not employed to any considerable extent while I was at the hospital, perhaps partly on account of expense and lack of trained personnel, but also, I believe, because it is not as much in vogue as formerly.

Electric shock and insulin shock were given to a rather large number, especially to catatonics and other schizophrenics, but also to manic depressives, and those suffering from melancholia and other affective disorders. The treatment was prescribed and regulated by the superintendent but often administered by the assistant physician. I did not particularly enjoy giving electric shock. It is not pleasant to watch a patient having a severe convulsion. However, the apparatus used is almost foolproof, and to my knowledge there have been no fatalities at the hospital. Fortunately, the patient has no recollection of the experience, and in many cases there is apparent improvement. So far as I know, no one has explained satisfactorily what really happens and there is some question as to the ultimate results. Some patients receive at least two electrical shock treatments a week, for two or three months. Metrazol shock is rarely used, even when safeguarded by curare.

Another form of treatment, which at times causes the physician considerable anxiety but which seems to be quite effective in syphilis of the nervous system, is the production of increased bodily heat by malarial infection which is then controlled by quinine.

In ordinary medical practice, a report of a temperature rise to about 106° would be quite alarming to any physician. It was, therefore, something of a surprise to me to be expected to maintain a patient's temperature at that level for several hours a day for a number of days. Without hyperthermy the prognosis of paresis has always been grave. It is a little more hopeful now.

One might suppose that a state hospital would be a very noisy place. It usually is not. Of course, at times, certain disturbed patients do make quite a racket. But they are not always responsible for weird sounds; radios account for some of them. Self-centered patients are not disturbed too much by the noises others make. Usually if a patient is continually creating a disturbance, he is given a sedative. The doses used and apparently well borne are somewhat larger than those usually given in private practice. Morphine was used much less often than I had expected.

Generally, it was only the agitated patients, who

would exhaust themselves by excessive activity, who required much sedation.

Of course, restraint was also often necessary in such cases, both for the protection of the patient himself and others. The use of low beds, of wooden or metal guards beside the bed, of restraint by sheets or by leather fleece-lined cuffs applied to the wrist or ankle, and finally the dressing of the patient in jackets euphemistically called "camisoles," were measures available. The camisole is a canvas jacket, the sleeves of which are long and closed so that the patient's hands cannot be destructive. It could be applied carelessly and make the patient very uncomfortable. The nurse in charge of each floor is responsible for its proper adjustment.

Restraint of some sort is necessary in the case of any patient with delusions, even if he is not destructive or violent. Otherwise, he would wander about and get lost or come to harm.

The only alternative, and the one which I believe would have to be used if no restraint were permitted, would be to have a sufficient number of nurses and attendants so that the patient was constantly under surveillance.

History taking often threw some light on the reasons for the mental breakdown. We often got an inkling of the causes of the pitiable condition of many of the individuals we saw daily, from their previous records.

Some of the failures are due to inherited weaknesses, but many of them are the result of unfavorable environment and lack of training. This places a heavy responsibility on parents and all who are part of the world of growing children.

Meyer[2] has pointed out the folly of regarding the bodies of patients as somehow separate from their personalities, and not regarding the individual as a social unit.

The world needs as social units persons who have courage, who will face difficulties and run risks. This usually means that they have a moderate amount of good sense, science, philosophy, and/or religion.

They must not be preoccupied with themselves or think that they are the most important individuals in the universe. In other words, they must not take themselves too seriously.

They cannot afford to indulge in the unhealthy emotion of hatred. Other emotions and appetites, necessary and useful in their place, must be kept under reasonable control.

Children trained along these lines are likely to grow up to be normal social units that will harmonize with other social units so that group action may be effective and progressive whether the group be a medical society, a legislature, or a society of nations.

We therefore need more people who understand human nature and its aberrations. We need many more psychiatrists and physicians who use psychosomatic medicine, and we need places where they can be trained.

Mental disease can be studied in our state hospitals. There is a wealth of material there. They could become centers of research and study, adjuncts to the University, and places where generations of interns and postgraduate students could secure thorough and invaluable experience and instruction. Politics should have no place in them. The state can well afford to provide comfortable homes and adequate salaries for even the assistant physicians and their families in order to build up permanent staffs of high quality, who would be stimulated and encouraged to do good work by the presence of interested students. The wages of other employes should be adequate. Antiquated buildings in other state hospitals should be promptly replaced, and overcrowding should be eliminated.

We have, then, near at hand a medical center of which we should be proud and of which even now we could make more use. With some effort on the part of members of the medical profession and other good citizens, it should become one of the great teaching institutions of the Midwest.

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CLINICAL-PATHOLOGICAL CONFERENCE

A CURE FOR NEUROGENIC BLADDER

Case Study

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Dr. A. H. Wells: I would like to wager that less than half of the audience know of a fairly recently devised and successful treatment for the paralytic bladder. Any prolonged delay in instituting this proper therapy frequently leads to irreversible changes not amenable to operation.

Case Study

Dr. O. E. Sarff: The patient, a white man, aged thirty, was admitted to the hospital complaining of bilateral flank pain of a dull character. He had had a hematuria for two months associated with some burning, smarting and frequency of urination. He had lost 20 pounds in approximately the last four months. He also stated that as long as he could remember he had had a dripping of urine which kept his clothes continuously soiled. Between normal voidings there was a continual escape of urine. His past history revealed that he had been operated upon at the age of two weeks for spina-bifida. His mother died of tuberculosis.

The physical examination was negative with the exception of tenderness in the region of the navel and bilateral club feet. Laboratory studies of the urine revealed a specific gravity of 1.014, pH 7, albumen 4-plus and microscopically packed fields of red blood cells, pus cells and bacteria. The urine culture had Pseudomonas pyocyaneous and Streptococcus fecalis. The red and white blood cell counts were within normal limits. The blood urea and creatinine were average. An intravenous pyelogram revealed a bilateral hydronephrosis and bilateral hydro-ureter. The patient was running a fever of 100.3°. An indwelling catheter was placed in the bladder and it was lavaged with 1:10,000 zepherin every three hours. The patient received adequate fluids and penicillin, 100,000 units every four hours.

The patient improved symptomatically. On November 27, two weeks after admission, cystoscopic examination revealed a small spastic bladder with marked trabeculation and a chronic type of cystitis. The roentgenogram (Fig. 1) revealed a very small bladder. He was kept on indwelling catheter drainage and bladder irrigations with sulfadiazine and penicillin until the urine cleared of pus, blood and bacteria.

On December 14, a transurethral resection of the bladder neck was performed. An indwelling catheter was removed on the fifth postoperative day. The urine was cloudy at this time. The patient could void as much as 300 c.c. There followed an additional estimated 150 c.c. of involuntary urination. He voided every two hours. On the seventh postoperative day he had a chill with the temperature going to 105°. The catheter was immediately replaced. The temperature dropped several hours later to 101° and the following day it returned to normal. The catheter was again removed on the ninth postoperative day, following which he voided approximately 200 c.c. at a time, every two to three hours. He still had involuntary urination, especially during the night. Because of his mental state, I felt it would be advantageous for him to go home for Christmas and return later.

The patient was readmitted on December 26, afebrile and urinating without difficulty. His fluid output at this time was 1,500 c.c. However, he did have several episodes of urinary incontinence. His urine had a pH 5 with a specific gravity of 1.021, a trace of albumen and 200 pus cells, few bacteria and a few red blood cells per high power field cells. The urine varied between this amount of pus to where there were occasional red blood cells and 50 to 60 cells per high power field.

The patient had a marked intolerance for penicillin, and shortly after the second admission the drug was withdrawn. He immediately became afebrile. He was given streptomycin, 2,000,000 units in divided doses daily.

Because of the rather unsatisfactory results of the previous resection, on January 28 a cystoscopic and cystographic examination was performed. The bladder capacity had increased from approximately 40 c.c. to about 180 c.c. After placing 300 c.c. of media in the bladder, both ureters and the left kidney pelvis filled with the opaque media (Fig. 2). There was a marked destruction of the left kidney. No dye came through this kidney after intervenous injection of indigo-carmen.

On February 10, the bladder neck was again resected and approximately 2.5 grams of tissue were removed. The bladder at this time was markedly improved. There was no reaction following the operation. The catheter was removed on the third day. The patient was instructed to void every two hours. The bladder was at times filled with water, and the patient was instructed to attempt to shut off the flow of urine while voiding.

After several weeks he became entirely continent during the day and had only rare involuntary urinations at night. The patient was discharged with completely clear urine. He had remained dry for a period of about ten days, and his general health had definitely improved. The change in mental status was remarkable.

From the Department of Urology, St. Luke's Hospital, Duluth, Minnesota.

He had taken a new lease on life and was looking forward to doing some sort of work. Because of the status of the left kidney, however, he was asked to return for another check-up.



Fig. 1. Roentgenograph revealing early severe contraction of urinary bladder.



Fig. 2. Roentgenograph revealing increased capacity of urinary bladder and extreme left hydronephrosis and hydro-ureter.

He returned on May 1, free of all symptoms with the exception of some frequency, burning, smarting and at times an urgency which allowed an escape of a small amount of urine. He did not think he had been running a fever. The urine, however, had a marked pyuria and he was again put on streptomycin. After clearing the urine, a retrograde filling study was again done. It had previously revealed a marked destruction of the left kidney with no measurable function. I felt that there was no visible tissue in this kidney and that it was serving as a focus of infection. Therefore a left nephrectomy was accomplished on May 15. The kidney (Fig. 3) had a grade III hydronephrosis. The patient made an entirely successful and smooth convalescence and was discharged on May 31 with complete control of his urine, and the urine was crystal clear.

On December 1, an intravenous pyelogram revealed no changes in the right kidney from the previous examination. A urinalysis revealed at this time only a few pus cells. He had been working steadily and had had complete control of his urine at all times.

Discussion

The past decade has seen a marked revision in treatment of neurogenic bladder dysfunctions. The etiologic factors involving the spinal cord include trauma, congenital anomalies, inflammation, degeneration, and neoplasm. Regardless of origin of the neurogenic bladder, the transurethral treatment is directed to the problem of relieving a spastic bladder and vesicle neck obstruction which does not permit the proper emptying of the bladder.

There have been several excellent classifications, but for practical consideration it is necessary only to divide the conditions into the (1) atonic, and (2) hypertonic type of bladder. The treatment is the same for both groups. The atonic type of bladder is seen in the tabetic and during the first or shock phase immediately following injury. The hypertonic or chronic stage is met with in all long standing cases except the tabetic bladder and is usually seen in from two to six months after the initial injury.

Cystometric examination has not been satisfactory except in determining the type of bladder, while cystoscopic examination reveals not only the type but affords an ample opportunity for studying the vesicle neck as well as the bladder structure. It follows that a competent neurological examination is essential.

During the acute stage, an indwelling catheter with closed drainage, well tolerated, is entirely satisfactory. Bladder infection should be carefully controlled with chemotherapy and irrigations. It is of importance to maintain a good blood electrolyte balance. Great care is to be exercised in the control of decubitus lesions which usually accompany cord trauma.

After the acute stage, transurethral resection is the present choice of therapy. This form of treatment has been extended with gratifying results to include bedridden patients. The rationale is that of removing the vesicle neck obstruction which is due to hypertrophy of the detrussor muscles and fibrosis at the bladder neck. The resection should be carried out in the entire circumference of the vesicle neck and distal to the veru.

Serious bleeding is often encountered if too enthusiastic a resection is carried out. It is far better to accomplish the resection in several stages rather than go too deep in an attempt to remove the entire obstruction. It has been my practice to give the patient a fair trial following the resection before resorting to further procedure. A patient must also be mentally equipped to cooperate, and he must have a desire to do so. Much of the success or failure depends on the careful and close co-operation between the patient and the physician following the surgical procedure.

QUESTION: What are the main symptoms in differential diagnosis?

ANSWER: Symptoms vary, of course. The neurogenic factor is usually known because of the cord lesion. One must be ever on guard for an ectopic ureteral orifice which may cloud the diagnostic picture. The symptoms vary according to the amount of infection and renal involvement. The incontinence is usually not a constant drip as is found in damage to the sphincter, but the urine escapes in spurts intermittently.

QUESTION: What tissue is removed in this type of case?

ANSWER: That again varies. It is usually a mixture of hypertrophy of the detrussor muscles and fibrosis. In the elderly patient one must, in addition, remove varying amounts of prostatic tissue. It is the muscle hypertrophy and fibrosis that forms the "collar" which obstructs.

QUESTION: What is the cause of the bilateral hydronephrosis and hydro-ureter?

ANSWER: Unquestionably the etiological factor is the long-standing bladder neck obstruction. This same type of upper urinary tract destruction is encountered with congenital urethral valves and, in rare instances, long-standing prostatic obstruction. However, the latter is of minor consequence, usually due to the fact that it receives adequate attention.

QUESTION: Were tuberculosis and syphilis ruled out in this case?

ANSWER: Yes. For the sake of brevity, this was not adequately discussed. However, the guinea pig tests were normal and also the blood Wassermann test.

Conclusion

It is not generally known among the profession that urologists have been accomplishing gratifying results in patients suffering from neurogenic bladder dysfunctions. Although immediate treatment is important to prevent upper urinary tract destruction, some cases of many years' duration may be greatly improved.

I have presented a case of a thirty-year-old man, the victim of a congenital lumbar spina-bifida and meningocele, complicated by neurogenic bladder, bilateral hydroureter, bilateral hydronephrosis with marked renal damage to the left kidney. Transurethral resection of the bladder neck and left nephrectomy resulted in a satisfactory physical and mental change in what had been considered a completely incapacitating and hopeless condition of many years' duration.



Fig. 3. Photograph of hydronephrotic kidney.

TEAMWORK IN PUBLIC HEALTH

More effectively than any other approach, medicine and public health can build a conception of common human need, of the single destiny that awaits life on this planet, whether it be good or evil. We are members of one human family, fighting the same enemies of disease and suffering. Only by united effort can we survive, and the field of public health can be a practical demonstration of a new kind of teamwork. It can be a bridge across the gulf that separates this frightened present from a saner and better balanced future. Symbolically and literally, it can bring its healing techniques to a human society that is desperately sick.—RAYMOND B. FOSDICK, Am. J. Pub. Health, Jan., 1948.

Case Report

TUBERCULOSIS OF THE HIP

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A CASE of tuberculosis of the hip which was interesting in the excellent result obtained, as well as the difficulty experienced in diagnosis, is being reported. The fact that this patient, who had proved tuberculous infection of the hip, obtained a spontaneous arrest of the process and maintained almost a complete range of painless motion in the hip is felt by us to be unique.

A perusal of the literature reveals a paucity of cases of tuberculous involvement of the hip in which a good result was obtained in so far as motion was concerned. Hyde[1] stated in 1932: "Adequate motion returns to a tuberculous hip only when the diagnosis is made at the incipiency of the disease and treatment immediately instituted. When such a result is obtained, the diagnosis may justifiably be doubted unless it is supported by incontrovertible bacteriological or pathological proof." This statement is felt by us to be as applicable to cases seen currently as it was in 1932; in view of the rarity of cases of tuberculosis of the hip in which good function is recovered, we report the following case.

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Report of Case

A Negro boy, four years of age, was admitted to the Mayo Clinic, April 28, 1943, and the following history was obtained: The patient had been well until January, 1943, when following a fall on the left hip as his feet slipped on a waxed floor, a limp developed and he seemed to have some pain in the left hip. After the limp had persisted ten days the boy's mother took him to a physician, who treated him by traction to the left leg for a week and then applied a plaster cast. The cast remained in place some two months and was removed April 20, 1943, one week prior to his coming to Rochester. The patient had walked with a pronounced limp during that week.

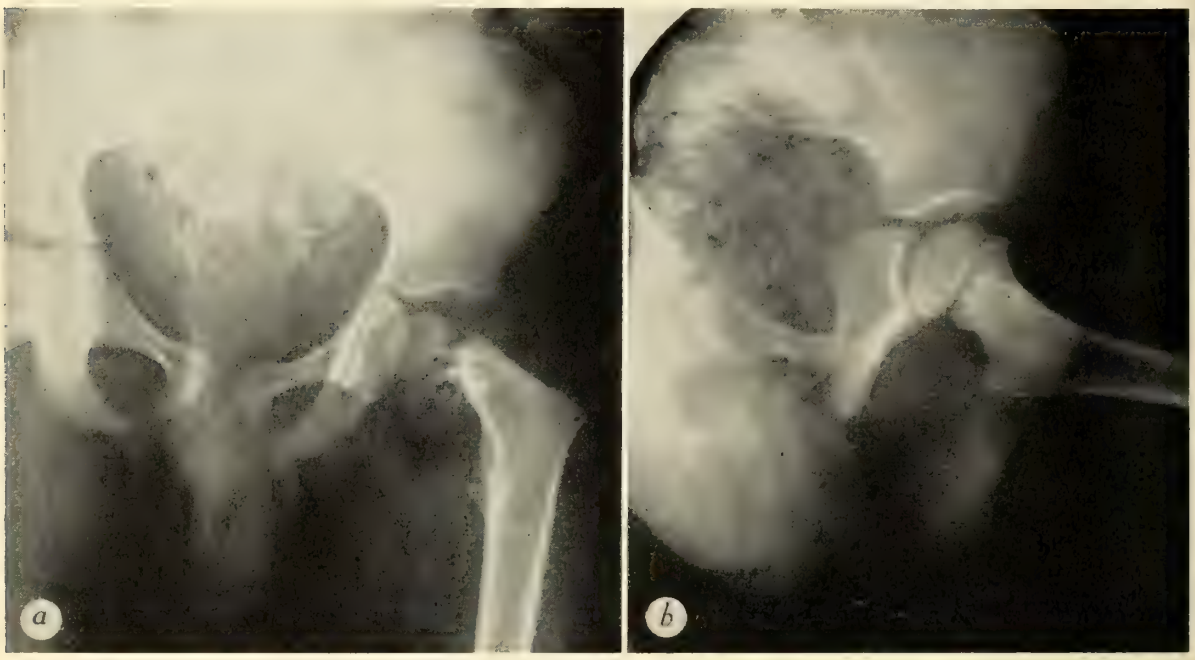


Fig. 1. Left hip on admission April 28, 1943. (a) Anteroposterior view. (b) Lateral view.

Physical examination on admission gave essentially negative results except for findings referable to the left hip. There was slight limitation of flexion and of internal and external rotation. Slight palpable grating was felt in the left hip on motion. There was no tenderness. The legs were equal in length. The Trendelenburg sign was mildly positive on the left and negative on the right. The patient walked with a marked limp.

Roentgenograms (Fig. 1) revealed a peculiar type of destructive lesion of the femoral neck in the epiphyseal region with separation of the capital epiphysis and some fragmentation and erosion of the upper end of the neck. There was some upward displacement of the neck of

the femur with rotation of the femoral head. Roentgenograms of the thorax were negative except for calcified hilar nodes on the left. Routine examinations of blood and urine revealed normal findings, and serologic examination gave negative results.

Although a tuberculous infection of the hip was regarded as a possibility, it was felt that the clinical history and roentgenologic findings were not entirely compatible with a diagnosis of tuberculosis of the hip and that a chondroma or bone dysplasia of the epiphyseal region could not be ruled out without a biopsy. Accordingly, exploration of the left hip was carried out on May 4, 1943. When the lesion in the neck of the femur was approached, thickening of the capsule and soft tissue was seen. When the capsule was opened, some caseous necrotic material was encountered. The cartilage on the head of the femur appeared normal. Specimens of the thickened tissue and necrotic material were sent to the pathologist, who reported tuberculosis. When this report was received, the tissues were closed tightly and a spica plaster cast was applied. The results of subsequent examination of fixed slides of the material taken for biopsy and of the guinea pigs separately inoculated subcutaneously and intraperitoneally with material removed from the hip at operation were positive for tuberculosis.

Treatment consisted of immobilization in a series of double spica plaster casts for fourteen months with the hip in slight flexion, abduction and internal rotation. Following immobilization a walking caliper brace was used for ten months. In September, 1945, two years

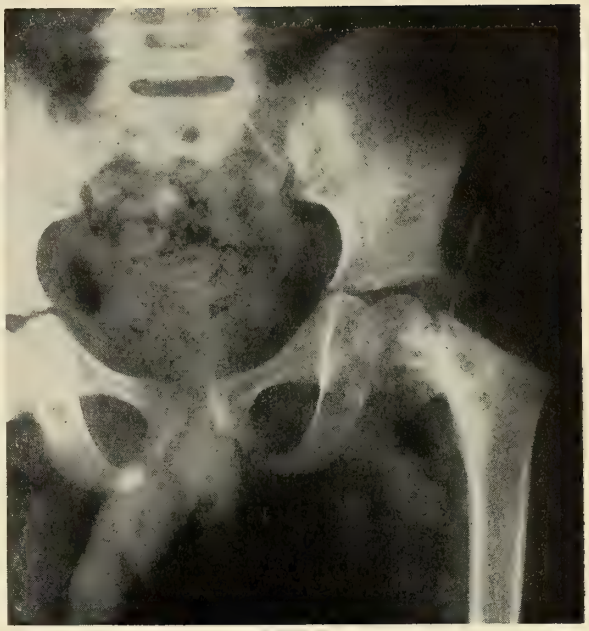


Fig. 2. Anteroposterior view January 15, 1944, after eight months of immobilization in a double spica cast.

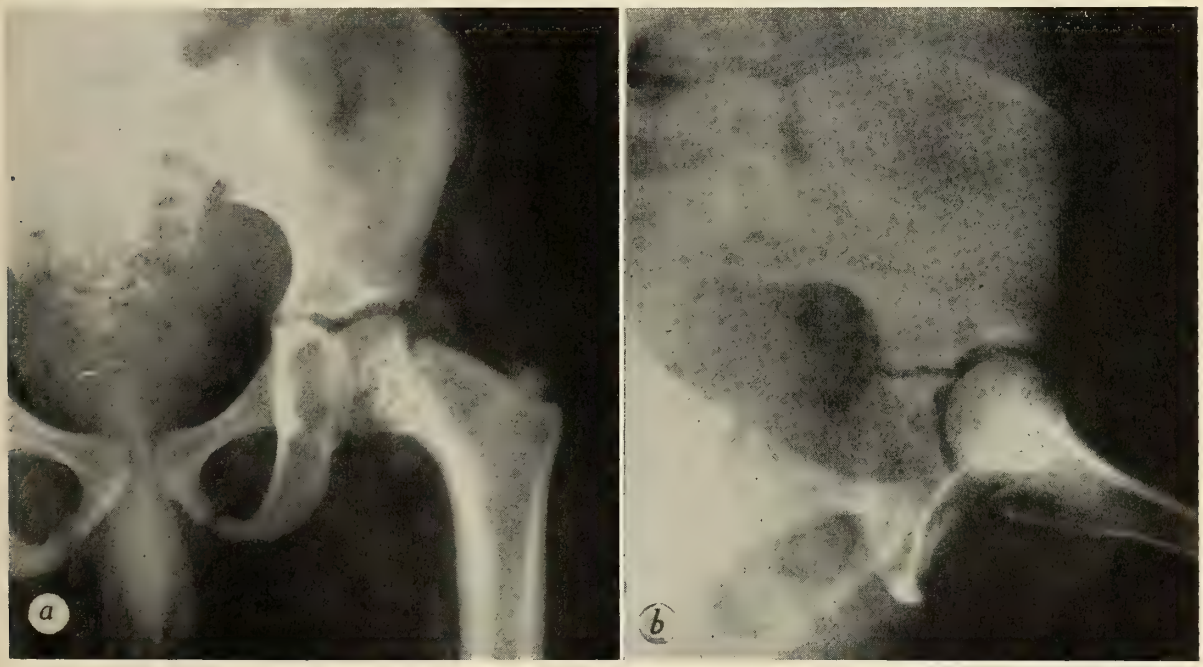


Fig. 3. June 10, 1946, nine months after resumption of normal activity. (a) Anteroposterior view. (b) Lateral view.

and eight months after the onset of symptoms in the hip, the patient was allowed to resume normal activity and start school. Frequent recheck examinations and roentgenograms made during the period of active care revealed steady progress toward healing (Fig. 2) of the bone lesion and a remarkable retention of active motion.

On June 12, 1946, three and a half years after the onset of symptoms, the patient was last seen. At that time almost complete, if not complete, resolution of the tuberculous process was noted in roentgenograms of the hip (Fig. 3). Some osteoporosis of the inferior portion of the head was still present and two cystic regions about the acetabulum were present which, it was felt, would bear watching. Flexion of the hip could be carried out from 180 to 110 degrees. There was slight limitation of internal and external rotation. Other motions of the hip were normal. The patient walked with only a very slight limp. His general health was good and physical examination gave negative results except as noted. He had completed the previous nine months' school term, indulging the rigorous activity of the normal schoolboy, without suffering from any disability from the hip.

Reference

1. Hyde, C. L.: Tuberculosis of the bones and joints in children. Am. Rev. Tuberc., 26:625, 1932.

History of Medicine In Minnesota

A HISTORY OF MEDICINE IN SCOTT AND CARVER COUNTIES

Scott and Carver Counties were settled in the early fifties, at favorable town sites along the Minnesota River. Thomas A. Holmes, one of the earliest "town site hunters" in the Northwest, came up the river in the spring of 1851 and located the sites of Shakopee and Chaska. Almost immediately Shakopee flourished as a settlement. Dwellings, stores, churches, and a post office had been erected by the spring of 1853 when Scott county was established by the territorial legislature.

Holmes sold the site of Chaska to David Fuller in the spring of 1852 for $1,000. The next year the first settlers, mostly Germans from Saint Paul, arrived. Carver County, together with several other counties, was established by the territorial legislature in 1855. In that year the long stream of immigration began in earnest. The Sioux tribes left Scott and Carver counties, and more safety was afforded the settlers. Country districts became populated after 1857, when town site speculation crashed and settlers turned to farming.

Dr. Frederic N. Ripley was the first physician in Scott County. He came as a trader and land claimer, and did not intend to support himself by his medical practice alone. He spent the winter of 1852-1853 in trade at Shakopee. Failing in that venture, he gave it up in the spring, but continued the practice of medicine there. During the first year, Dr. Finch and Dr. Kinney, both of Saint Paul, made the trip up the river occasionally and attended the sick. Dr. Kinney had a claim shanty at Shakopee, and he must have made several trips up the river to protect it since his claim was vigorously disputed. During the summer of 1853, many of the settlers were ill of fever, and a number of the children died. At such times, many of the settlers vainly attempted to treat themselves. One of the most ill founded "cures" was the placing of powdered sulfur in the stockings as a treatment for the grippe. Dr. John L. Wakefield settled in Shakopee in the spring of 1854. He was a graduate of Yale and had had six years of practice prior to his arrival. He too laid out a claim. He was, in fact, accused of claim jumping. However, he made no permanent enemies since he was a fine doctor and was badly needed in the community.

In the same year, thirty-six-year-old Dr. John Landenberger, settled at Helena, Scott County. He was famous among early sportsmen as the most successful and the most frequent participant in the chase. It was said that he brought home three to seven deer from each day's hunt. Both Dr. Landenberger and Dr. Wakefield practiced in Scott County for many years.

Dr. Charles Lord was another early settler who came to Carver County in 1854. His health had failed, and he believed, as did many others, that the climate of Minnesota would be a favorable change. Incidentally, many consumptives came to Minnesota for the same reason that brought Dr. Lord; and, as a result, the Minnesota death rate was augmented considerably. Dr. Lord staked out a 160-acre claim near Shakopee in the fall of 1854. He farmed during the fifties; and in 1864, upon regaining his health, he moved to Shakopee and practiced medicine there for the next twenty-three years.

The spring of 1855 brought an inrush of immigrants, and with them came cholera. Shakopee was one of the leading river points on the Minnesota at that time, and the disease was brought by boat up the river. In addition to the usual summer fevers there was an epidemic of typhoid. Dr. Josiah S. Weiser and Dr. A. O. Risley came to Shakopee that summer, making a total of four practicing physicians there, so that one or two of them must have been available at all times.

These men were prospectors as well as physicians. Dr. Risley came as a member of the North Western Pioneer Company and made frequent trips around the territory procuring and surveying town sites. Dr. Benedict Lehmann, who came to Carver county in 1856, pushed farther to lay out the village of Helvetia on the Crow River. The hardships of such a life are epitomized in the experience of Shakopee's first physician, Dr. F. N. Ripley. Late in the year 1855 he moved to a town site belonging to him near the source of the Crow River, now the town of Litchfield. He camped there during the winter; in March he and a companion started from Cedar City to Forest City to obtain supplies. Half way there they strayed from the road and wandered for two days in a snow storm. Exhausted, the doctor lay down to die. McLelland, his companion, kept on and at length found an unoccupied cabin, where he spent sixteen days with little food and no fire. He was found, half-starved and badly frozen, by an exploring party and was brought to town. There both his legs were amputated. McLelland surmised that the doctor's remains had been devoured by wolves, as he himself had experienced difficulty in keeping the wolves off while in the cabin. The beautiful lake at Litchfield is named Ripley, presumably for the doctor who first laid out the town.

Amputation of frozen limbs was not uncommon in the experience of the pioneer physician. One account from the *Shakopee Independent* for April, 1856, reads:

> Amputation was performed severing both members slightly above the ankle, the patient meanwhile under the influence of chloroform. The operation was performed by Drs. C. L. Davenport, Wakefield, Weiser, and Leriemondie, and is spoken of as being an exceedingly well executed and delicate surgical operation.

C. L. Davenport, mentioned in the above, came in 1856. He remained but a few months in Shakopee and was a co-partner of Dr. Weiser. Several other physicians settled in Scott County before 1860. Among them was Dr. Phillip M. Williams, a typical Virginian of good breeding in search of adventure or a fortune. He was a gentleman and made friends on all sides, but soon he passed on in search of a larger field. Dr. Salisbury was the first physician in the township of St. Lawrence, Scott County. In addition to the practice of his profession, he taught the first school there. Physicians were among those best fitted for civic duty where schooling was a prerequisite. William A. Griffin, the first resident physician in Carver County, held many public offices. He became the first justice of the peace in the town of Carver, and was also the village president and treasurer. Dr. Weiser served as mayor of Shakopee in 1858.

Weiser's further adventures are deserving of note since his death precipiated one of the major engagements of the Indian war in Dakota, the Battle of Big Mound. In 1862 he was appointed surgeon to the First Regiment of Mounted Rangers, although at the time he was only twenty-nine years old. The following account is based on official records:

> While pursuing a large body of Indians in the summer of 1863, the troops under General Sibley were halted at Big Mound, North Dakota. Through the interchange of communications between the scouts, the Indians expressed a wish to have a conference with General Sibley. He having been warned of danger declined. Dr. Weiser, however, went among the Indians,

many of whom he knew, and returned to camp saying they only wanted peace. He shortly returned to the top of Big Mound with two or three other persons and was almost immediately shot and killed. His companions escaped by hard riding and by the bad marksmanship of the Indians. As soon as the killing of Dr. Weiser was known, General Sibley ordered the First Battalion to attack the Indians, which they did, accompanied by some companies of the Sixth and Tenth infantry regiments. A fearful thunder storm came on during the attack and lightning killed one cavalryman, but the Sioux were routed; and although it was against Sibley's orders, a number of rangers brought back scalps in revenge for Dr. Weiser's death.*

Difficulties with the Indians touched the lives of many of our pioneer physicians. At the time of the Indian outbreak in 1862, Dr. John L. Wakefield of Shakopee was physician at the Yellow Medicine Indian Agency. The doctor escaped but the members of his family were captured by the Indians and held for six weeks until rescued by the troops.

The pioneer physician endured more than the usual hardships of an early settler. The cold winters were hard for everyone, and the roads were always difficult to travel; but it was the physician's duty to go out at any time, whatever the weather, and to travel for hours on horseback over nearly impassable trails with all the speed he and the horse could endure. Illustrative of their hardships is a quotation from the diary of an old settler regarding Dr. Southworth, who established a practice at Belle Plaine during the middle fifties:

> Old Dr. Southworth is dead. He had so much practice that it wore him right out.

Dr. John A. Macdonald who settled in the vicinity of Chaska about 1859, was a pioneer physician who became prominent. In the year 1864 a severe epidemic of smallpox raged in both Carver and Scott Counties, and Dr. Macdonald did much to relieve the sufferers. He wrote an article published in the *Valley Herald* (April, 1864) for the purpose of calling the people's attention to sanitary and preventive measures. It read:

> The painful fact that smallpox in some of its various grades, from that of varioloid to that of the confirmed confluent, has broken out in this vicinity is now no longer a matter of doubt. . . .

The following were, in brief, his recommendations:

> (1) Not to give way to unnecessary fears, for by doing so they greatly affect the nervous system, (2) cleanliness of person, clothing, and dwellings; no direct communication to be held with persons affected, (3) for persons believing themselves attacked not to be swallowing by the wholesale boxes of cathartic pills, (4) children above the age of six months should be immediately vaccinated. I am sorry that much apathy is shown by parents in this matter. (5) re-vaccination, especially after seven or eight years have elapsed since the first vaccination, (6) removal of valuable articles of wearing apparel, extra bed clothing, et cetera, to a distance from the affected room where they may be freely exposed to a current of pure air. (This to be done on the first appearance of the disease.) This precaution will prevent clothing from communicating the disease to others.

The epidemic was almost immediately checked at Chaska. The deaths were attributed more to want of timely treatment and imprudent exposure than to the violence of the disease. There were a few cases at Chanhassen and several mild ones at Carver during the month of April. At the same time, smallpox appeared at Shakopee. An early settler wrote in his diary:†

*Quoted in somewhat abbreviated form from the *Shakopee Argus Tribune*, December 20, 1928.

†Diary of D. M. Storer, published in the *Scott County Argus* in 1899 under the title of "Pioneer Days—A Daily Résumè of Early Scenes and Events in the History of Shakopee."

April 1-4. There is a good deal of excitement in town about the smallpox. There are two cases of it and some of the people had just as leave spread it as not.
April 12-14. Our boy is quite sick from the effects of vaccination.
July 5-9. The smallpox is in town again, there being two cases of it.

In August a number of cases of smallpox appeared in Carver County some ten miles from the river. Dr. Macdonald reported that five children in a German family died from its effects because he was called too late to render them any assistance. The disease seemed to be of a virulent form. Several cases of a lighter type appeared at that time within two miles of Chaska. Many people in both counties had the disease in a mild form throughout the following winter. The citizens of Chaska became alarmed again toward spring, and many parents took their children out of school. No quarantine regulations existed, no means of isolation was provided, and there was no board of health. As was anticipated, the disease reached alarming proportions in several localities as spring approached. In May of 1865 the towns of Sand Creek and Helena had twelve to fifteen deaths. In the spring of 1865, Chaska's only physician, Dr. Macdonald, joined the Second Minnesota Cavalry as First Assistant Surgeon. That left Chaska, a town of between 800 and 900 persons, without a resident physician.

During the next few years, little sickness was reported either in Chaska or in Carver. A number of physicians tried to establish practices in each town, but, attracting few patients, they moved on. Residents of Chaska called on Dr. Griffin of Carver or Dr. Wakefield of Shakopee when need arose. Smallpox recurred here and there, noticeably in January, 1867. Measles became prevalent at Waconia in 1868. Except for a few of those patients there was not much practice for a new physician in the locality.

Shakopee was visited by scarlet fever during the first years of the sixties. A severe form of the disease appeared in the summer of 1860 and spread rapidly. A number of children died during the summer, and the epidemic continued into October. In the next year several more scarlet fever deaths occurred, but the disease affected only the children.

It was not until 1870 that Carver County appointed a county physician, while Scott County appointed one about fifteen years later. Until then the county poor funds had covered whatever bills were incurred when the county commissioners called for medical care of paupers. The county physician had no responsibility or authority in the prevention or control of disease; it was for the purpose of disease control and prevention that the towns bestirred themselves, and boards of health in the larger towns were organized about 1872. But it was not for a decade or more that physicians gained control of the boards. Smaller communities appointed temporary health officers during epidemics, usually at the command of the state board of health.

A series of violent epidemics visited both Carver and Scott Counties in the first years of the seventies. Diphtheria, which had not been extensive in previous years, became a matter of serious concern during the fall and winter of 1874. Belle Plaine and Chaska felt it severely, and there were many deaths.

In December, 1870, there seemed to be more illness in Carver County than at any other time, as recalled by some of the residents. Typhoid and scarlet fever were most common. Dr. E. H. Lewis had just arrived in Carver, and the rush of patients gave him a running start toward popularity and success. The doctor at Chaska, as well, was kept busy since this community also had a great many cases of scarlet fever. It was reported that scarlet fever still raged in Carver County in January, 1871, especially at Carver. Dr. Lewis had over a dozen cases in the first week of January, counting only those of the Swedish settlement there. Several children died

of the disease at Shakopee in December, 1870. The following year there were sixteen scarlet fever deaths and eleven typhoid deaths in Scott County out of a population of 11,000.

Scarlet fever had barely run its course by 1872, when an epidemic of smallpox again struck the Minnesota valley. Early in 1870 it had prevailed in the neighborhood of Young America, in Carver County. Six or seven cases appeared there during March, and most of the people were vaccinated. The cases at Young America, however, appeared to be an isolated forerunner to the epidemic of 1872. It broke out first at Carver, and Dr. Lewis reported a dozen cases about a mile from town in December, 1871. By January 4 the *Chaska Valley Herald* announced that most of the persons in the county had been vaccinated. Hancock town must have been an exception because several new cases appeared there the next week. Dr. Lewis visited Hancock and vaccinated seventy-nine persons in one day. More cases appeared throughout the county; several victims died at Laketown and at Carver during January. In the first month of the epidemic, steps were taken to prevent the spread of the disease at Chaska. It was resolved by the village board that:

The president appoint a committee of three from the Board to act in conjunction with the Board of Supervisors in making such regulations as they may see fit to prevent the spread of smallpox, and that they are also impowered to hire such persons and expend such moneys as they may find necessary to carry out this resolution.

The president then appointed a committee of three as a board of health, and another resolution was adopted which read as follows:

Resolved: That no funeral procession where the diseased died of smallpox shall be allowed to pass through the principal streets of the village of Chaska and the Board authorizes the Committee appointed above to see that this resolution is enforced.

A third resolution read:

Resolved: That all physicians practicing within the limits of the Incorporated Village of Chaska shall notify the president, Hon. F. E. DuToit, of all cases of smallpox immediately after finding the same and failing to do so they shall be fined in the sum of $25 for each and every offense.

The following was also adopted:

Resolved: That any and all persons having cases of smallpox within their families are hereby prohibited from coming into the Village of Chaska on par and penalty of $25 for each and every offense.

Several residents of the town contracted the disease, and many others were exposed. More regulations were made by the board of health, in the first week of February, as follows:

I. That all persons sick or connected with families sick with smallpox shall remain confined within their own houses until cured of the same and for a further period of not less than two weeks.

II. That all persons who may have intercourse with persons having smallpox either in or outside of Chaska shall be subject to the same restrictions as specified above for those in whose families the disease is found.

III. No children belonging to or residing with any family having a case of smallpox in their house, shall be allowed to attend any of the public schools of said place.

Any person violating an order of the Board of Health is subject to a fine of $100 or imprisonment for three months. A strict compliance with this law will be enforced.

The first case in Scott County appeared at Shakopee during the first week of January. A German woman coming from Europe had been exposed to smallpox while passing through New York. As soon as it became known that she had the disease, the city council took charge of the premises where she was stopping. The council then issued an ordinance allowing the city to take complete charge of cases of contagious disease within the city. It also provided "that the Committee on Health of the City of Shakopee should provide a place of reception or hospital for the sick when a disease dangerous to the public health breaks out in the city." The usual type of quarantine regulations were stated and also "that the committee on Health shall see that the provisions of this ordinance are strictly complied with." Violation penalties were not to exceed $25 fine or thirty days in jail. Many of the citizens were vaccinated, and no other cases appeared in Shakopee.

Later in the month of January the disease broke out at Belle Plaine. It was thought to have been brought from Carver, a short distance across the valley. Some fifteen cases appeared in five families there, and several deaths resulted.

Sand Creek appointed a board of health about February 1 and took steps to prevent the spread of smallpox. Only one case was known in the town, but others had been exposed. At Jordan, a child became ill of smallpox, and the town adopted regulatory measures immediately. The board of health reported that all the school children of Jordan had been vaccinated "except one whose father had not sufficient wisdom to understand its utility." The trustees closed the school until the immediate danger was past. Other than the one mentioned, no further cases appeared at Jordan. After February the danger was over. Belle Plaine alone continued to suffer. Scarlet fever still lingered there early in the year, and a new outbreak of smallpox occurred near there in August.

In the year 1872 there were about ten physicians in Scott County, two or three residing at Shakopee, three at Jordan, two at New Prague, one at Belle Plaine, and one at Helena. Carver County had three physicians at Carver, two at Chaska, and others at Watertown, Hancock, Waconia, and Young America. This averaged, roughly, one physician for every 1,400 people for each county. Several villages of 1,200 or more had no physicians. The practice of many of these men covered hundreds of square miles, and they traveled from place to place by wagon and team. Naturally the doctor who owned the best and fastest horse got the most calls. In this district, crossing the river was particularly hazardous. Dr. Lewis of Carver lost a fine horse while crossing the ferry. After getting on the boat, his horse became frightened and jumped into the river, dragging the buggy with him. The doctor lost a valuable case of surgical instruments as well as his horse. The experience of Dr. C. S. Stoddard, who hung out his first shingle at Shakopee in March, 1874, is related as follows:**

> Dr. Wakefield, an old and much beloved physician had died but a few months before and there was a vacancy in the professional ranks. . . . The morning after my arrival I called upon Dr. Charles Lord, the only physician then residing in the place. . . . My second patient was an old lady living six miles east of Shakopee near Bloomington ferry. Mike Ryan took me out with his own team and sleigh late in the afternoon, during a snow storm, promising to surely bring me back the same evening. But before we were ready to return a terrible blizzard came on, and although we had started well on our return trip we found it utterly impossible to face the storm, the horses absolutely refused to go, and we returned to the house to wait till morning. . . . The storm increased, continuing two days and nights. . . . While awaiting for the storm to abate, my services were called into requisition in a neighbor's family, and now, after an experience of 26 years, I am ready to declare that I have never met with so serious a case in all its symptoms and consequences. Of course, I was unprepared for the emergency without instruments or medicine, and felt like a man forced into battle with his hands tied behind him. . . .

**Dr. C. S. Stoddard, "Looking Backward," published in the *Scott County Argus*, March, 1900.

Still I did all I could under the circumstances and I was left in the condition of the young doctor of whom I have heard, who upon being asked how he was succeeding with his first case of obstetrics, replied, "Very well. I have lost the mother and child, but by skillful attention I hope to pull the old man through."

Upon my return to Shakopee on Monday, we met the funeral procession of my first patient who had died during my enforced idleness.

. . . It was really quite a discouraging start for a young physician whose diploma was scarcely dry. . .

I was occupied with patients from the very first . . . looking backward now from my present standpoint of experience, I am led to wonder at the very generous patronage that was accorded me. . .

. . . There was no bridge at Shakopee at that time and we depended upon the ferries in summer and the ice in winter. One of these called the "upper ferry" was on the road leading to Chaska and owned by Ed Bass, while the lower ferry was on the road to Eden Prairie and was under the management of Mr. Wilcox, when he was not too sound asleep to be awakened by the long calls and mental cursings of the doctor anxious to reach his suffering patient on the other side.

Dr. Stoddard had some difficulty with German patients as he could not speak German, but he soon learned enough to get along. Continuing, in his own words, with the story of his early difficulties:

A son of Mr. Rivers of Eden Prairie had shot himself and I was summoned in great haste to his relief. Mr. R. drove the team and I was kept uncomfortably busy trying to stay in the wagon, expecting to be bounced out at every chuck hole, and there were many of these, dark and deep, in the old road which crossed the lower ferry and the bottom lands which lay beyond.

Another interesting phase of the life of the pioneer physician is brought out in Stoddard's mention of an exchange of services between a doctor and a blacksmith. The blacksmith, who had just married, offered to do all of Dr. Stoddard's smithing for a year if Stoddard would take care of his medical needs for the same period. The agreement was made, and at the end of the year there proved to be a difference of only fifteen cents in their accounts. Storer's diary mentions the same kind of arrangement. A town lot was given in payment to Dr. Weiser by the writer himself for medical services during a period of illness.

Strange cases confronted the doctor of pioneer days. Dr. Macdonald was once called upon to stitch up a horse's tongue which had been nearly cut off. Another account tells of a man who was gored by an elk. Burns from boiling water, and injuries to arms and legs caught in farm machinery were common accidents.

Quacks and "cures" were readily believed. It may be noted that during the 1870's the small town newspaper encouraged the acceptance of both. During the summer of 1877 two quacks, who claimed to be cancer specialists, came to Shakopee. They would mislead their patients who came to them with various cancers by first pretending to extract the cancer and then exhibiting to the patient various small animals, dead or alive. They made good profits and disappeared before those who had been "relieved" of toads, snakes and such, became dissatisfied.

Dr. Jacob Haas, of Chaska, a man of questionable reputation, was appointed county physician in 1874.†† All the doctors in the county, eight in number, had applied for the office of county physician, and the citizens of the town were surprised, disgusted, and somewhat amused. (Dr. Haas had offered to accept a salary of $250 instead of the customary $450 per year.) Immediately the Carver representative of the *Valley Herald* pointed out that the entire community hoped "the Board of

††He was not recognized by the members of the medical fraternity of the county or state as a physician, nor did he belong to any school of medicine. Furthermore, he was known to spend a large part of his money in the saloons while his wife and invalid child suffered in want. Nevertheless, his practice was said to be very large.

County Commissioners would have self-respect enough to reconsider their action and fill the place by a respectable physician." He mentioned also that Drs. Lewis, Grant, and Griffin belonged in the latter classification. A battle ensued on the printed page, with one issue of the paper publishing the invectives of the Carver correspondent and the next a mild defense from those of the county commissioners who had voted for Haas. It appeared that a resolution had been introduced immediately after Haas was appointed, saying "that the salary of the County Physician be drawn by an agent to be appointed by this Board whose duty it shall be to pay the same to his family (the Physician's) from time to time as in his judgment their necessity may require." Three of the five county commissioners were Germans and had voted for one of their own countrymen regardless of their civic responsibility. At last the situation was remedied by the appointment of reputable deputy physicians for certain districts, thus limiting Haas' responsibility. The next year a new plan, previously suggested by Dr. Lewis, was put into effect. Each commissioner had the privilege of calling on any doctor he chose to attend the poor residing in his district, at a certain rate per mile (about 25 cents). Medicines were furnished. Evidently extra amounts were paid for surgical operations or special treatments.

Many small or local epidemics struck Carver and Scott Counties during the last quarter of the nineteenth century. Among the diseases common to children there were measles, cholera infantum, whooping cough, chicken-pox, and spinal meningitis. Influenza, or the so-called *"la grippe,"* appeared frequently in isolated cases, and every few years in epidemic form, most noticeably during the nineties. Comparatively few cases were fatal, however. Lung fever was not uncommon, and many fevers and inflammations, inexpertly diagnosed, were given as the cause for deaths. Scarlet fever, smallpox, and typhoid continued their ravages from time to time.

By far the most fearful and frequent of epidemics was diphtheria. In 1878 it prevailed in several parts of Scott County, as well as in other parts of the state. In 1880 the *Shakopee Argus* published a circular from the state board of health giving the causes and means of preventing or checking diphtheria, since it continued to linger in that locality. The fall of 1881 brought an epidemic of the worst type, centering at Shakopee, which was then a town of around 2,000. Twelve persons died there of diphtheria before the New Year, and many more were affected. The committee on health was ordered to act according to Ordinance No. 12, made at the time of the 1872 smallpox epidemic. The committee investigated all cases suspected of being diphtheria and ascertained whether or not the patient suffered from that disease. They were allowed to employ two physicians. Permission was also given the city council "to cause each patient to be removed to a hospital to be established for that purpose, and to cause the premises where the sickness occurred to be thoroughly disinfected, or else to cause a red flag to be displayed at the front door of the house where such sick persons might be; and to adopt such quarantine regulations as might be necessary to prevent communication between the inmates of such house and the other inhabitants of the city." It was further resolved that all cases of suspected diphtheria were to be reported to the committee on health.

(To be continued in the May issue)

President's Letter

CANCER REMAINS MAJOR CHALLENGE

Throughout the month of April, we physicians rededicate ourselves to an important public service by joining in the observance of National Cancer Control Month. The physician can give direction and purpose to the cancer fight—he is the vital link in the chain by which it is hoped one day to subdue cancer and prevent it from further menacing human life.

There are three lines of defense against cancer. First, the patient; second, the practicing physician; and, third, the specialist. Like the corners of a triangle or the legs of a tripod, each one is as important as the other two; without one the others are useless, incomplete, ineffective.

The patient himself is mentioned first because it is he who must learn to know the danger signals of cancer and seek help when they appear. To strengthen this defense, we need intelligent education on cancer to counteract the fear and dread and the false modesty, which, especially for women, so often proves an ally of death. We physicians must help in this effort to educate the people; and we can help by cultivating to an even greater degree a friendly, sympathetic attitude and by being the kind of doctor that a timid, distressed person will turn to and find reassurance. The job of educating the public on cancer is indeed a complicated one. The symptoms of cancer are intimate, personal; yet they must be presented impersonally. Confidence must be built up in the mind of the public; yet false hopes must not be raised.

Because the practicing physician is placed second on our list of cancer defenses, it does not follow that he is any the less important. In reality, he is right on the firing line. He is the one to whom the patient brings his symptoms to be interpreted. Thus a heavy responsibility rests upon the medical profession to spearhead the attack on cancer. Even though health education in cancer is making people "cancer conscious," a patient cannot diagnose or cure his own cancer. Cancer patients are oftentimes saved or lost, depending upon the practicing physician's knowledge and ability to observe. The family doctor must read the signs and take appropriate action, or refer the patient to someone who can.

The third line of action against cancer—the surgeon—holds the key to whatever remedy is possible. He, together with the pathologist and the radiologist, provides the best line of offense to actually eradicate cancer from the human body. No matter how alert the patient and the doctor may have been, without the technical skill of this third unit any cancer case is lost.

Cancer control today is far from the hopeless problem that it was just a few years ago. There is reason to take heart and renew efforts in all phases of the cancer fight. We are seeing results in our cancer education; astounding progress is noted in the field of research considering the baffling nature of cancer. The sad fact is that cancer research needs MORE financial support and MORE trained workers than it now commands. More material aid to the cancer laboratory would produce even bigger life-saving dividends.

Recent trends indicate that cancer is just beginning to come under control. Real progress is being made in reduction of deaths, particularly among women. Education has played some part, but a number of other factors—largely the result of milestones attained through laboratory and clinical investigation—are also at work. Two notable examples are reduction in the number of birth injuries that go uncorrected, which is reducing cancer of the cervix, and better mouth hygiene which is cutting down cancers of the mouth.

It is only reasonable to believe that even more significant progress will be attained by advances in medical and surgical treatment with achievement of more adequate financial support. Cancer control, indeed, remains a foremost challenge, both to the medical profession and to intelligent laymen.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

REBATES TO OCULISTS

THE publication of the names of oculists cited by the Federal Government in its price fixing suit, which appeared in the press February 15, came as a surprise to the profession in general. The average physician had no idea that the practice of accepting rebates from opticians by oculists was as widespread as the citation claimed. The citation does not establish guilt, although it must be admitted that where there is smoke, usually there is fire.

The unpleasant situation involves two questions —one of professional ethics and the other of legal liability.

If an oculist charges his patient a fee for refraction and accepts a rebate from the optician who supplies the glasses, there can be no question but what he is guilty of a breach of medical ethics, essentially fee splitting. This practice has been repeatedly declared unethical by the organized profession, and the apparent widespread practice and attendant publicity to the detriment of the medical profession as a whole has caused general resentment among its members.

Whether the acceptance of rebates by oculists subjects them to legal action is a matter of law about which we would not attempt to express an opinion. The Federal Government contends that the oculists and optical firms are guilty of conspiracy to fix the price of glasses in violation of the Sherman anti-trust act. Whether an actual conspiracy can be proven in the forthcoming trial remains to be seen.

The purchase of a pair of glasses after receiving a prescription from an oculist would seem to be a simple matter. It apparently is not so simple, and the way the glasses are supplied varies greatly. Some oculists depend on the optical house to fill the prescription and fit the glasses, and he checks the correctness of the lenses supplied. Some oculists have to send out of town for the filling of their prescriptions. They must fit the glasses and assume the risk of breakage in so doing as well as spend more time on the fitting. A group of physicians or an oculist sometimes hires an optician's services and thus makes a profit over and above his fee for refraction. Or an oculist may conceivably own stock in an optical shop. The question of ethics may thus be rather involved.

If, as the Government contends, the optical houses are making rebates to oculists as high as 50 per cent of the cost of glasses, the price of glasses is considerably higher than it should be. The usual effect of competition is to maintain the price of an article at a level which provides a reasonable profit. The only competition which would seem to exist in the sale of glasses would be in the percentage of rebates made to the oculists. The Government will doubtless try to prove that such a high price for glasses could be maintained only by a monopoly in the supply of materials that go to make up a pair of glasses on the part of two large optical houses.

The supplying of glasses to the public is obviously in a very unsatisfactory condition and requires correction. If the prospective trial will result in the clearing of the practice, with a resulting reduction in the price of glasses to a proper level and the entire elimination of rebates, it will be an outcome to be highly desired. We trust that the trial will not be long postponed for the sinister purpose of keeping the unfortunate picture in the public eye for political purposes. The sooner the air is cleared by the establishment of guilt or innocence, the better.

PROPYLTHIOURACIL

THE value of propylthiouracil in the treatment of hyperthyroidism has been established. Although more toxic than thiouracil on a weight basis, the smaller dose of propylthiouracil required to establish a normal basal metabolism is much less likely to produce toxic symptoms, and has a more prolonged effect. The action of both drugs is in the prevention of the utilization of iodine by the thyroid gland.

Propylthiouracil should be given in 50 mg. doses every eight hours initially in the more

severe cases of hyperthyroidism and only twice a day in milder cases. As the patient improves, the dosage is decreased and 25 to 50 mg. daily is usually sufficient to maintain a restored normal basal metabolism.

While it is possible that the use of propylthiouracil may produce permanent remissions in some cases, its main usefulness is in the preparation of individuals with hyperthyroidism for operation. After the basal metabolism has been reduced to the neighborhood of plus 20, iodine in the form of Lugol's solution should be added and continued for two or three weeks before operation. Some administer iodine with the propylthiouracil from the beginning of treatment. Iodine fosters the involution of the gland which results in less bleeding at operation.

Although propylthiouracil has proven its great value in the preparation of hyperthyroid patients for operation and may prove, as time goes on, to be of even greater value in obviating the need for operation in a larger percentage of individuals, it should be remembered that occasionally toxic manifestations in the form of leukopenia or even agranulocytosis, fever or dermatitis does result. Periodic checks of the blood picture should, therefore, be made, and patients receiving this medication should be warned to report the occurrence of sore throat, fever or dermatitis at once.

RETROGRESSION IN MEDICAL ADVERTISING

MOST physicians of today cannot go back in memory to the days when anyone could advertise almost anything in a medical journal irrespective of its intrinsic scientific value. The practicing physician had no way of feeling certain that a remedy advertised in any medical journal had proven scientific value.

The situation became so bad that the leaders in the American Medical Association realized that something must be done to clean up medical advertising. In 1905 the Council on Pharmacy and Chemistry was established, and outstanding members of the medical and allied professions, for the most part associated with medical schools were asked and consented to serve on the Council. The Council's unbiased opinions, from a clinical and laboratory standpoint, on the usefulness of remedies were to be and have been the basis of the Council's approval or disapproval. The A.M.A., by action of its House of Delegates, deleted many advertisements from its medical publications, taking a considerable financial loss and has since restricted its advertisements to Council-accepted articles.

In 1912, the Board of Trustees established the Cooperative Medical Advertising Bureau for the benefit of the state medical journals. Its function was and is to procure advertisements for the state journals, and members of the Bureau in turn agreed to limit their advertisements to Council-accepted products. Certain leeway was allowed publication committees of the state journals in the acceptance of local products. The existence of the Bureau has been a great source of economy for all the member journals and has resulted in the maintenance of high advertising standards in those journals. MINNESOTA MEDICINE has been a member of the Bureau since it began publication. The *Illinois Medical Journal* has never been a member of the Bureau, and the *New York State Journal of Medicine,* while agreeing for a brief period to accept only Council-approved articles, has for a period of years accepted unapproved advertising.

It is to be regretted that recently the *Rhode Island Medical Journal* and *California Medicine* have strayed from the fold and have left the Cooperative Medical Advertising Bureau. Recent issues of *California Medicine* have contained unapproved advertisements. This is obviously a step backward, in refutation of the Council on Pharmacy and Chemistry, taken for revenue only. This lack of co-operation on the part of these four journals affects all the other state journals financially and lowers the status of medical advertising in general. The House of Delegates of these four states could, of course, bring their journals into the Bureau if they so wished, and should be urged to do so.

PUBLIC DEMAND FOR SERVICE AT NIGHT

The American Medical Association calls on county medical societies to meet the public demand for emergency medical service at night.

"From many sections of the United States," says an editorial in a recent (March 6) issue of *The Journal of The American Medical Association,* "complaints have come lately that persons who have called physicians late at night have been unable to secure attendance from either those whom they considered their family physicians or from specialists or, indeed, from any physician."

The American Medical Association says that large county medical societies or urban groups should maintain a physicians' telephone exchange which would take the responsibility for locating physicians if response is not made to the ringing of the telephone in the home or in the office.

The solution is simple and practical, requiring only a minimum of community organization. A number of county medical societies already maintain a physicians' telephone exchange where doctors' calls may be received and doctors located if their office or home telephones do not respond. Such an exchange can be utilized as at night or on holidays, simply by furnishing the exchange with a list of physicians who are able and willing to make night calls. Such physicians would probably include the younger general practitioners, newcomers to the community, and others in general practice. If such a roster were available, and its availability widely publicized, night calls for medical service would soon gravitate to this center and the patient would be assured the services of a physician.

Under such a system the necessity for calling many doctors would be eliminated. Two calls at most would be necessary. Where there is no physicians' telephone service, it might be possible to have the hospitals cooperate by handling such night calls.

The Medical Society of the District of Columbia and the Milwaukee County Medical Society have found such a plan practical, as have a number of other societies.

By this simple and practical expedient, which is doubtless in effect in modified form in a number of communities, the sick can be served and the medical profession can redeem its pledge of unselfish public service.

It is highly important that where such arrangements exist they be brought to the attention of the lay people in the community through appropriate public channels, not once but repeatedly, to keep the shifting populations well informed.

Few problems in the field of medical service have aroused so much public discussion. Whether resentment against physicians is justified or not, it does harm. The solution for this problem is so eminently simple and would reflect so favorably upon physician-patient relationships that medical societies everywhere are urged to give it serious consideration immediately.

MINNESOTA DEPARTMENT OF HEALTH

Public health nurses and nursing advisory committees throughout Minnesota will join with others throughout the nation in observing Public Health Nursing Week, April 11 to 17. The theme of Public Health Nursing Week this year is "Help your public health nurse help your community."

The present status of public health nursing services in the state shows considerable improvement over the situation a year ago, says Miss Ann S. Nyquist, director of the Division of Public Health Nursing, Minnesota Department of Health. The State Legislature in March, 1947, passed an act subsidizing public health nursing by allowing $1,500 a year from state funds to assist any county in establishing or extending public health nursing services.

During the past year, eleven Minnesota counties have established public health nursing services and eight counties have employed additional nurses. There are now 464 public health nurses in Minnesota, about equally divided between the large cities and the rural areas. Fifty counties now have generalized public health nursing services. Thirteen counties that have set up provisions for public health nursing services report vacancies, and there are still twenty-four counties that have no rural nursing service.

In the three large cities of the state, there is a ratio of one public health nurse to every 3,622 people. This is a very favorable ratio, according to the standards of the American Public Health Association, which recommends at least one nurse to every 5,000 people. In the rural areas of Minnesota, however, one nurse must serve, on the average, 11,013 people. An effort is now being made to train more nurses for work in rural communities, both in hospitals and in public health work. State licensing of practical nurses is also likely to improve the situation somewhat in the rural areas. Already 450 Minnesota women have taken examinations for licensing as practical nurses.

MINNESOTA NURSES ASSOCIATION

The need for students to fill the classes of Minnesota's schools of nursing is of vital importance to every citizen—particularly to members of the medical profession and to hospital administrators.

The Minnesota Nurses' Association has been carrying on a recruiting program for several months, but despite this effort students are still needed for spring classes in both professional and practical schools of nursing. At least 1,500 students will be needed to fill the fall classes, always the largest.

The U. S. Department of Labor estimates that between 500,000 and 600,000 practicing professional nurses will be needed to fill the demand by 1960. This makes the enrolling of students in our schools of nursing a long-range and important question.

In its campaign to interest qualified young women in the profession of nursing, the association has emphasized the following points, and they are factors with which everyone interested in the nursing situation should be acquainted.

More nurses are needed because:

1. The public is demanding not only more but more specialized nursing care.
2. There are more hospital beds today than ever before in the history of the country.
3. An extensive hospital building plan is under way and young women will be needed to staff these institutions.
4. The public health program is growing by leaps and bounds and more nurses are needed in this field.

Thus it is obvious that after a young woman finishes her education in nursing there will be plenty of vocational opportunities for her for years to come.

Nursing offers a greater variety of jobs than any

other profession. A young woman may choose to be a general staff nurse in a hospital, a supervisor, an operating room nurse, a teacher of nursing, a school nurse, a country nurse or an industrial nurse, or an office nurse. There are many more sections of the broad field of nursing also.

Today schools of nursing offer one-year courses in practical nursing and children's nursing.

Not only are the educational opportunities flexible but many schools have scholarship funds and loan funds to help a qualified student receive her nursing education.

Mrs. Dolores Colesworthy of Minneapolis is enrollment chairman of the Minnesota Nurses' Association. She suggests that anyone wishing more information about educational and vocational opportunities in nursing make inquiries at the Association's office, 2642 University Avenue, Saint Paul 4, where all the facts about it have been collected.

PRACTICAL NURSE LICENSURE IN MINNESOTA

To carry out the law relating to licensure of practical nurses and accreditation of schools of practical nursing, Governor Luther Youngdahl appointed three additional members to the State Board of Examiners of Nurses to serve for the purposes of this act only. These persons were Dr. Phillip F. Eckman of Duluth, Miss Alice Barlow, L.P.N., on nursing staff at Minnesota Soldiers' Home, Minneapolis, and Miss Dina Bremness, R.N., superintendent, Glenwood Community Hospital. Their appointments became effective as of August 1, 1947, and since that time, this augmented board has had several meetings at which policies and regulations regarding the licensure of practical nurses, and standards for accreditation of schools of practical nursing have been determined.

An advisory committee composed of representatives from vocational education, practical nurse education, professional nursing groups, hospital, dietetic and medical organizations, the Minnesota Practical Nurses Association, and the Women's Division of the Farm Bureau Federation was organized. This committee has given helpful suggestions to the board in its new undertaking. Miss Ella Mae Thompson, president of the National Association for Practical Nurse Education, served in an advisory capacity for one week during the period when the standards for accredited schools were being formulated.

The working manual containing standards and guides for schools of practical nursing has been sent to fourteen schools; in addition, several other agencies which are considering establishment of schools have copies.

The law is a permissive one and does not prohibit anyone from nursing the sick for hire, who does not assume or represent to be a Licensed Practical Nurse. The abbreviation, L.P.N., is official for those who receive licenses. In order to qualify, applicants must have at least eighth grade education or its equivalent, be at least 18 years of age, possess good health and character, and have graduated from an accredited school of practical nursing or its equivalent. Among these equivalents are at least two years of general experience in practical nursing under the supervision and direction of physicians and registered nurses. In some instances, applicants may qualify with less than two years' experience because of education in a school of basic professional nursing, or because of training as hospital corpsman, et cetera, in military service.

On February 21, the first examination was held in Mankato, Moorhead, Duluth, and St. Paul. Four hundred and sixty-one practical nurses wrote at that time. Of this number, 187 were graduates of the Vocational Hospital School of Practical Nursing, Minneapolis; forty-two from the Franklin Hospital School of Practical Nursing in Minneapolis, and fourteen from the Union Hospital School in New Ulm. Of this group, 424 or 92 per cent passed and were granted licenses. The next examination will be held in August or September, 1948.

AMERICAN PUBLIC HEALTH ASSOCIATION

The executive board of the American Public Health Association has announced the seventy-sixth annual meeting of the association as taking place in Boston, Massachusetts, November 8 to November 12, inclusive, 1948.

This congress of professional public health workers is the largest of its kind held anywhere in the world. It will be attended by representatives from all parts of the United States, Canada, Cuba and Mexico, and from Latin American countries. Delegates from Europe and Asia are also expected.

Meeting with the American Public Health Association will be many related organizations which select the same time and place as the association for their annual meetings. Among them are:

American School Health Association
Association of Maternal and Child Health and Crippled Children's Directors
Association of Reserve Officers of the U. S. Public Health Service
Association of State and Territorial Health Officers
Conference of Municipal Public Health Engineers
Conference of Professors of Preventive Medicine
Conference of State and Provincial Public Health Laboratory Directors
Conference of State Directors of Health Education
Council of State Directors of Public Health Nursing
National Committee of Health Council Executives
Public Health Cancer Association

An extensive scientific program is in preparation, with the current problems in mind of public health dentists, engineers, epidemiologists, food and nutrition specialists, health officers, industrial hygienists, laboratory workers, maternal and child health experts, public health educators, public health nurses, school health specialists and vital statisticians.

The membership of the American Public Health Association now approaches 12,000 and an attendance of 4,000 is anticipated at the Boston meeting. Dr. Reginald M. Atwater is the association's executive secretary, with offices at 1790 Broadway, New York 19, N. Y.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

TOP GRADE MEDICAL CARE IS DOCTOR'S FIRST DUTY

Doctors of medicine can be of greatest service to the public in three ways—by providing top grade medical care, by promoting public health and by acting as counsellors and leaders in community life.

This was the conclusion reached at the annual County Officers' Meeting held February 28 in Saint Paul. Purpose of the meeting was to discover ways in which medicine can increase its usefulness to the public. A panel of physicians reported on public service activities now being carried on by the Minnesota State Medical Association.

Following this, a forum entitled "The Public Speaks" was held, at which representatives of labor, rural groups and the press suggested ways in which medicine can improve its services.

High quality medical care, administered by qualified and conscientious physicians should be the first consideration of the medical profession when it seeks ways in which it can be most helpful to the public, it was suggested. This does not rule out health education. However, radio programs, health releases and the like are merely adjuncts of top grade medical care.

Advocates Professional Unity

Speaking on the need for interprofessional cooperation, Dr. Charles G. Sheppard, Hutchinson, advocated unity of the medical profession, itself, as the first step. Without good family relations, he warned, the profession cannot function at its best. Having achieved internal unity, the medical profession must strive to promote friendly cooperation and relationships with members of the other professions dealing in health matters—dentists, nurses, pharmacists, hospital administrators, social service workers and others. Public health problems, Dr. Sheppard said, can best be solved through the joint efforts of all of these groups.

Dr. Sheppard called special attention to the work being done by the State Department of Health and praised the department for its "aggressive stand against inroads of socialized medicine whenever that apparition has reared its head in federal state health programs."

The work of the MSMA's Committee on Rural Medical Service was described by the chairman, Dr. Paul C. Leck, Austin. He advocated the establishment of health councils in the communities throughout the state which will bring together all organizations, voluntary and official, having an interest in health and welfare. He reported that preliminary steps were taken recently to establish health councils in several communities. Groundwork has been laid in Austin, Worthington, Fergus Falls and Mankato to bring together various groups to discuss plans. Dr. Leck expressed the hope that these councils will be established in the near future.

Public Policy Outlined

The five-point program of the Association's Committee on Public Policy was outlined by the chairman, Dr. Reuben F. Erickson, as follows:

1. Information and education for the general public in methods which will bring the highest possible quality of medical and hospital care for everyone, everywhere.

2. Co-operation with all lay and professional groups whose aim is the preservation of professional freedom and continued improvement in individual and national health.

3. Encouragement and promotion of agencies providing medical and hospital services on a voluntary, pre-payment basis.

4. Support of legislation promoting wider and more effective distribution of quality medical care.

5. Defeat of legislation which will result in a lowering of medical standards.

Dr. A. E. Cardle, Association president, speaking on public health education, stressed the importance of keeping the public informed on health matters. He pointed out that the public is often reluctant to seek medical aid simply because it has not been educated to the value of it in preventing as well as curing disease.

Fight Fear and Ignorance

Dr. Cardle told the delegates, "If the people are reluctant to claim protection which is rightfully theirs, it is the medical profession's duty to break down the barriers of fear and ignorance and bring health to the people in spite of their reluctance. Certainly curing disease is hardly more noble than preventing it."

A review of the home-town medical care program for veterans, which has been in operation one year here in Minnesota, was reported by Dr. Ralph H. Creighton, chairman of the Veterans Medical Service Committee. He stressed the importance of this program as a public service activity, saying that veterans deserve the best medical treatment possible and expressing the hope that physicians in the state would continue to cooperate in this effort to provide treatment needed.

It was the duty of your Medical Economics editor to lead off the session by endeavoring to point out the need for public service activities. It is your editor's firm belief that the public will follow the able and sympathetic doctor, and in order for medicine to carry out its programs it must secure the confidence and support of the public. All of these public service activities are important, but they must not be allowed to replace the basic purpose of the high calling of medicine—that of ministering to the sick, the relief of suffering and the prevention of disease insofar as is possible.

Public Wants More Co-operation

During the forum which featured the public viewpoint, the delegates learned that the medical profession needs to provide even more health education, to extend prepayment programs for medical and hospital services and to co-operate more fully with other public-spirited organizations.

Speaking for labor, Mr. Orlin Folwick, public relations counsel for the Minnesota State Federation of Labor, called attention to the fact that workers need perhaps even more health care than any group in the population because of the hazards of their jobs, accidents, et cetera, and the need to keep labor healthy to assure maximum production.

The need for increased co-operation with the press was cited by Mr. Kenneth Crouse, Saint Paul *Dispatch-Pioneer Press* staff writer. Mr. Crouse said that the press regards the medical profession as one of its main allies, since life, death and sickness make up a major part of the day's news.

Representing rural leaders in Minnesota, Mr. J. S. Jones, executive secretary of the Minnesota Farm Bureau federation, discussed the wants and needs of rural people in terms of general better living conditions. In seeking to improve living conditions on farms and in rural communities, he said, people naturally want to enjoy health and medical protection on par with that obtainable in cities. He also stressed the importance of budgeting for medical care and encouraged physicians to use every means to promote the spread of prepayment medical and hospital plans. He pledged the support of farm leaders in this effort.

Public Relations Summarized

A diagnosis and interpretation of the present status of medical public relations was presented at the evening dinner by Mr. Theodore R. Sills of Chicago, public relations counsel to several national organizations, including the American Medical Association. Mr. Sills warned the doctors to watch for and heed "danger signals" in public opinion. Politicians, he said, are watching the public closely; and when they feel that the public is anti-doctor and anti-organized medicine, there will be stringent laws enacted.

Mr. Sills suggested the old rule of public relations be applied: "Do good and tell the people about it." He stressed the fact that public relations is "not a whitewash brush." First comes the "do good." First, he said, medicine must have a constructive public service program; then in addition it must avoid acts which will antagonize the public.

Mr. Sills also pointed out that in order to carry out an effective public relations program, every member of the medical profession, individually, will have to assume his part in establishing good relations with his patients.

RED CROSS DEVELOPS BLOOD BANK PROGRAM

A program to build up supplies of whole blood throughout the country is now under way sponsored by the American Red Cross and directed by Dr. Ross McIntire. The program here in Minnesota is not, however, set to start immediately and probably will not be launched until June of next year. In formulating plans, the American Medical and Hospital Associations and other groups concerned were contacted. It will be up to the medical profession to supervise the program, since a large share of the responsibility for the individual cases in which the blood is used will remain with the attending physician.

The Hennepin County Chapter of the Red Cross will not participate in the program because there is already in existence the Minneapolis War Memorial Blood Bank which will carry out the program of collecting, storing and dispensing blood for that locality.

State Committee Studies Program

The Committee on First Aid and Red Cross of the Minnesota State Medical Association has met to discuss this program. Before considering any action, the committee decided that more specific information about procedures for carrying on the program was necessary. Accordingly, a series of questions was drafted by the committee and sent to Dr. McIntire. In order that doctors in the state may be familiar with the Red Cross proposals, the questions submitted and the replies received are printed here:

1. *Will the donors be grouped, a Wassermann test be done, the Rh factor determined, and blood tested for anti-a-titre; where will these laboratory procedures be carried out?*

All donors will be serologically tested by the Kahn test and in many centers one additional test, such as the Wassermann, Hinton, Mazzini, etc. The blood group will be determined not only by the grouping of the red cells but generally by confirmation using a donor's serum against known cells. The Rh factor will also be determined by the use of at least two diagnostic serums in every case. The group O blood donors will be screened by high-titered anti-A, and anti-B agglutinins, so that certain group O blood donors may be set aside as "safe universal donors." All these procedures are to be carried out in the blood center by technicians suitably qualified and trained under the Red Cross program and supervised by a medical director or medical technical director.

2. *Are there any definite ideas as to the fee the physician may charge for the administration of the blood or plasma?*

Although the blood and blood fractions will be distributed by the Red Cross without charge for these products the matter of hospital service charge and physicians medical charge is in no way jeopardized. Since each blood center will be under the direct supervision of a committee of the local medical society, it will be possible for this organization to suggest a limit on the fee or a standard fee for hospitals or physicians.

3. *Will intravenous sets be furnished and if so, will they be rubber or plastic?*

Intravenous recipient sets, probably of the disposable variety, will be supplied with each unit of blood. These are at present plastic materials with a special nylon filter.

4. *What is the status of the danger of virus hepatitis in the use of this blood and plasma and is it true that irradiation eliminates this danger?*

The problem of serum hepatitis is still being explored by various research laboratories and to date there is no proof that irradiation eliminates this danger. All precautions will be taken as recommended by our advisory committee, made up of experts from all over the country.

5. *Will serum be made available? Will the plan urge cross-matching of the blood in the event that some error might occur in labeling the proper group on the bottle?*

Whole blood, packed red cells, plasma and fractions of plasma will be made available. Serum is not included. The program urges the re-checking of blood specimen tubes attached to each bottle, by the laboratory of the hospital using the blood, and cross-matching is a necessary preliminary.

6. *At what age will blood be discarded or sent in for processing? Will the ACD solution be used to prevent coagulation?*

The blood will be kept for seventy-two hours before distribution, and then since it is in ACD solutions may be used for the following eighteen days. Unused blood will then be re-collected for removal of the plasma for fractionation purposes.

7. *How soon after drawing blood will it be chilled? What will be the recommended degree of chilling?*

In general the bleeding bottles will be precooled before use in a refrigerator at 4 to 10° C. and the blood will be replaced in the refrigerator as soon as it is drawn.

8. *How will distribution centers be selected, especially in remote localities?*

Distribution centers will be selected according to needs and following application from local Red Cross chapters which have met the conditions required by the national organization. One of these conditions is the approval of

the local medical society and all medical groups involved in any community and the formation of a committee by such groups to supervise the activities of the blood center. Remote localities will be served by mobile units both for collection and distribution of blood, although in the latter case even planes may be needed.

9. *If blood from colored individuals is to be drawn, especially in places where there are few colored people, is it to be made available for those colored people or what will be recommended in the use of blood from colored people?*

The position of the American National Red Cross with regard to the segregation of blood from colored donors is that this remains a local prerogative. The Central Committee (formerly the governing body) of the American National Red Cross issued the following statement of policy regarding the segregation of blood in the National Blood Program:

"Inasmuch as, on the basis of recorded scientific and medical opinion, there is no difference in the blood of humans based upon race or color, the plan does not require the segregation of blood; however, whenever necessary to insure the success of the plan, which is to make available blood and blood derivatives to all the people of the United States regardless of race or color, chapters will collect and hold blood in such a manner as to give the physician and the patient the right of selection at the time of administration."

NATIONAL HEALTH ASSEMBLY CALLED

A ten-year federal health plan for this country is the subject to be discussed by a National Health Assembly being called by the Federal Security Administration for May 1-4, 1948.

It started out as another packed conference similar to the one held in 1938. When news of the conference first broke, it was revealed that out of an executive committee of twenty-four picked by Administrator Oscar R. Ewing, only one was a doctor, George F. Lull, Secretary and General Manager, American Medical Association.

An editorial in the AMA *Journal*, commenting on the obviousness of the health insurance propaganda motives behind the meeting and noting the lack of adequate physician representation, was answered by Mr. Ewing's belated addition of fourteen persons to the executive committee from several groups including the hospital, medical, nursing, dental and public health associations. Administrator Ewing, in announcing the conference, said that he was acting at the request of the President who wants him to develop "feasible national health goals for the next ten years."

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Fake Doctor Must Serve One Year in Minneapolis Workhouse

Re State of Minnesota vs. Frank Herman Gold, also known as Frank H. Gould.

On March 8, 1948, Frank Herman Gold, also known as Frank H. Gould, thirty years of age, residing at 300 Fifth Avenue N. E., Minneapolis, was sentenced by the Hon. Levi M. Hall, Judge of the District Court of Hennepin County, to the maximum term of one year in the Minneapolis Workhouse. Gold was sentenced following his plea of guilty to an information charging him with the crime of representing himself to the public as a doctor of medicine without being registered under the Minnesota Basic Science Law. Gold was immediately taken to the Workhouse to commence serving his sentence.

The defendant was arrested on March 3, 1948, by Minneapolis police officers who discovered Gold representing himself to the public as a doctor after having purchased various surgical instruments and medicinal supplies in Saint Paul and Minneapolis. Gold, who was born in New York City and came to Minneapolis in 1941, was previously convicted of the same offense on May 21, 1946, in the District Court of Hennepin County. At that time Gold was placed on probation for one year by Judge Lars O. Rue. Shortly after Gold's probation expired in 1947, he purchased a rubber stamp on which he designated himself as a doctor of medicine. He also purchased the surgical instruments and medicines found in his possession by the Police Department at the time of his arrest. Gold has also married following his previous conviction and represented himself to his wife as a doctor. Gold, at the time of his arrest, was an employe of a Minneapolis bakery. During the seven years that Gold has resided in Minneapolis, he has been employed as an orderly at two Minneapolis hospitals and he has also worked as a clerk in three Twin City drug stores.

Former Minneapolis Abortionist Sentenced to Two Years in Federal Prison

Re State of Minnesota vs. James Lloyd Beckman

On March 16, 1948, James Lloyd Beckman, thirty-six years of age, 3425 Portland Avenue, Minneapolis, was ordered by the Hon. M. M. Joyce, Judge of the United States District Court, to serve two years in a Federal institution to be designated by the Attorney General of the United States. Beckman was brought into Federal Court following his release from the Stillwater Prison on February 24, 1948, where he had served a three-year sentence imposed by Judge Frank E. Reed of the District Court of Hennepin County on November 7, 1945,

(Continued on Page 412)

Minnesota State Board of Medical Examiners

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

PHYSICIANS LICENSED FEBRUARY 7, 1947
December 1946 Examination

Name	*School*		*Address*
ANDERSON, Myron George	U. of Minnesota	MB 1946	Miller Hospital, Saint Paul, Minn.
ANDERSON, Wallace Roger	U. of Minnesota	MB 1946	Minneapolis General Hospital, Minneapolis, Minn.
BARR, Ronald Wayne	U. of Minnesota	MB 1946	St. Luke's Hospital, Cleveland, Ohio
CARD, William Harrison	U. of Minnesota	MB 1946	111 Pratt St. So., Minneapolis, Minn.
CARTER, Robert Eldred	U. of Minnesota	MB 1946	Cleveland City Hospital, Cleveland, Ohio
CHAMBERS, Richard Owen	U. of Minnesota	MB 1946	420 Oak St. S.E., Minneapolis, Minn.
DEAL, Harold Raleigh	U. of Minnesota	MB 1946	Ortonville, Minn.
GINSBERG, Robert Louis	U. of Minnesota	MB 1946	1807 Ford Road, Saint Paul 5, Minn.
GRUYS, Robert Irving	U. of Minnesota	MB 1946	Maple Lake, Minn.
HANNON, Donald William	U. of Minnesota	MB 1946	1846 Sargent Ave., Saint Paul, Minn.
JENSEN, Adrian Richard	U. of Minnesota	MB 1946	5038 34th Ave. S., Minneapolis, Minn.
JOHNSON, Curtis Merlin	U. of Minnesota	MB 1946	Miller Hospital, Saint Paul 2, Minn.
JOLLY, Elizabeth Ann	U. of Minnesota	MB 1946	318 Harvard St., S.E., Minneapolis 14, Minn.
KELLY, James Harold	U. of Minnesota	MB 1946	Belgrade, Minn.
KEYES, Robert Walker	U. of Minnesota	MB 1946	Mercy Hospital, Chicago, Ill.
KOSIAK, William	U. of Minnesota	MB 1946	Milaca, Minn.
KOTTKE, Frederic James	U. of Minnesota	MB 1945 MD 1945	Division Physical Medicine, University Hospital, Minneapolis 14, Minn.
LARSON, Loren John	U. of Minnesota	MB 1946	2108 25th Ave. So., Minneapolis 6, Minn.
LEVIN, Bernard Benjamin	U. of Minnesota	MB 1946	903 Newton Ave. N., Minneapolis, Minn.
LICK, Louis Charles	U. of Minnesota	MB 1946	University Hospital, Minneapolis 14, Minn.
MacDONALD, Roger Allan	U. of Minnesota	MB 1946 MD 1947	Littlefork Hospital, Littlefork, Minn.
MACKOFF, Sam Mordecai	U. of Minnesota	MB 1943 MD 1944	1571 E. Maryland, Saint Paul 6, Minn.
MARK, Vernon Herschel	U. of Minnesota	MB 1946	5051 Fremont Ave. S., Minneapolis, Minn.
MAXEINER, JR., Stanley Robert	U. of Minnesota	MB 1946	5122 Garfield Ave., Minneapolis, Minn.
McGEARY, Malcolm Donald	U. of Minnesota	MB 1946	5045 Garfield Ave. S., Minneapolis 7, Minn.
McKENZIE, Eva Elaine	U. of Minnesota	MB 1946	512 Delaware S.E., Minneapolis, Minn.
McQUILLAN, John Ralph	U. of Minnesota	MB 1946	142 W. 49th St., Minneapolis 9, Minn.
MEYER, Robert Paul	U. of Minnesota	MB 1946	529 Tyman Place, Faribault, Minn.
MEYERDING, Eugene Villaume	U. of Minnesota	MB 1946	160 Prospect Terrace, Saint Paul, Minn.
NUDELL, Gerald	U. of Minnesota	MB 1946	Salt Lake County General Hospital, Salt Lake City, Utah
NUESSLE, William Frederick	U. of Minnesota	MB 1946	328 Cass Ave., Springfield, Minn.
PELUSO, Charles Robert	U. of Minnesota	MB 1946	318 W. King St., Saint Paul, Minn.
REEVES, Melvin Mitchell	U. of Minnesota	MB 1946 MD 1947	Good Samaritan Hospital, Portland, Ore.
ROLLINS, Troy Gaylord	U. of Minnesota	MB 1946	Elmore, Minn.
ROWBERG, Raymond Gerhard	U. of Minnesota	MB 1946	Le Sueur, Minn.
SANFORD, Raymond Arthur	U. of Minnesota	MB 1943 MD 1943	102-110 2nd Ave. S. W., Rochester, Minn.
SHAPERMAN, Martin Moses	U. of Minnesota	MB 1946	Mt. Sinai Hospital, Chicago, Ill.
SHRAGG, Harry	U. of Minnesota	MB 1946	Elmore, Minn.
SISTERMAN, Thomas Joseph	U. of Minnesota	MB 1946	1518 E. Lake St., Minneapolis, Minn.
STIEGLER, Farrell Soron	U. of Minnesota	MB 1946 MD 1947	2215 Plymouth No., Minneapolis, 11, Minn.
SULLIVAN, John James, Jr.	U. of Minnesota	MB 1946	Highland Park General Hospital, Detroit, Mich.
SULLIVAN, Robert Emmett	U. of Minnesota	MB 1946	5101 Dupont Ave., S., Minneapolis, Minn.
SUTHERLAND, Donald	U. of Minnesota	MB 1946	Minneapolis General Hospital, Minneapolis, Minn.
TAYLOR, Maxine Yvonne	U. of Minnesota	MB 1946	Department of Anesthesia, 950 E. 59th St., Chicago, Ill.
TETLIE, James Peter	U. of Minnesota	MB 1946	Swedish Hospital, Minneapolis, Minn.
UBEL, Frank Andrew, Jr.	U. of Minnesota	MB 1946	Brainerd Clinic, Brainerd, Minn.
VON DRASEK, Joseph Carroll	U. of Minnesota	MB 1946	St. Mary's Hospital, Duluth, Minn.
WAGNER, Paul A.	U. of Minnesota	MB 1943 MD 1943	2603 N. E. Union Ave., Portland, Ore.
WALLINGA, Jack Vance	U. of Minnesota	MB 1946	Cleveland State Receiving Hospital, Cleveland, Ohio
WATSON, John Robert	U. of Minnesota	MB 1946	Robert Packer Hospital, Sayre, Penn.
WEBB, John B., Jr.	U. of Texas	MD 1941	102-110 2nd Ave. S.W., Rochester, Minn.
WEDES, Deno John	U. of Minnesota	MB 1946	Madison General Hospital, Madison, Wis.
WILD, John James	U. of Minnesota	MB 1946	202 So. Lexington, Saint Paul 5, Minn.
ZUPANC, Edward	U. of Minnesota	MB 1946	Wisconsin General Hospital, Madison 6, Wis.

Reciprocity Candidates

Name	*School*		*Address*
GOOCH, James Oliver	Tulane U.	MD 1939	Mayo Clinic, Rochester, Minn.
MAZZITELLO, William Frank	Marquette U.	MD 1945	2089 Sargent Ave., Saint Paul, Minn.
THOMPSON, Hugh Jeffrey	U. of Minnesota	MB 1942 MD 1943	Student's Health Service, University of Minnesota, Minneapolis 14, Minn.

PHYSICIANS LICENSED FEBRUARY 7, 1947

January Examination

Name	*School*		*Address*
ADCOCK, Leon L.	U. of Minnesota	MB 1946	891 Rice Street, Saint Paul, Minn.
ADCOCK, Madeline S.	U. of Minnesota	MB 1946	Como Station, Rt. No. 3, Turtle Lake, Minn.
ATMORE, William George	U. of Minnesota	MB 1946	St. Mary's Hospital, Duluth, Minn.
ALLEN, Cameron Smith	U. of Manitoba	MD 1939	102-110 2nd Ave. S.W., Rochester, Minn.
ANDERSON, William Blair	U. of Minnesota	MB 1946	Salt Lake County General Hospital, Salt Lake City, Utah
BEYER, Eugene Franklin	U. of Minnesota	MB 1946	Miller Hospital, Saint Paul 2, Minn.
BODELSON, Adrian Haskell	U. of Minnesota	MB 1946	St. Mary's Hospital, Duluth, Minn.
BREY, Theresa Eileen	U. of Minnesota	MB 1946	Minneapolis General Hospital, Minneapolis 15, Minn.
CHAUSS, Jay Manuel	U. of Minnesota	MB 1946	150 Ocean Ave., Brooklyn, N. Y.
CROMER, JR., Horace Emerson	Med. Col. of Va.	MD 1939	102-110 2nd Ave. S. W., Rochester, Minn.
DANFORD, Kenneth Arthur	Temple U.	MD 1943	Mahnomen, Minn.
DAVIS, George Daniel	Indiana U.	MD 1938	Mayo Clinic, Rochester, Minn.
EBERT, Richard Vincent	U. of Chicago	MD 1937	Veterans Administration Hospital, Minneapolis 6, Minn.
ELDRED, Roy Edward	U. of Minnesota	MB 1946	Milwaukee County Hospital, Milwaukee, Wis.
FINE, Gerald	U. of Minnesota	MB 1946	844 Palace St., Saint Paul, Minn.
FLYNN, Robert Arthur	Loyola U.	MD 1945	Sparta Clinic, Sparta, Wis.
FRANKLIN, William Lewis	Indiana U.	MD 1943	508 Hume-Mansur Bldg., 23 E. Ohio St., Indianapolis, Ind.
GEIST, Jack Emil	U. of Minnesota	MB 1946	University of Iowa Hospitals, Iowa City, Ia.
GILSON, Betty St. Cyr	U. of Minnesota	MB 1943 MD 1943	109 23rd St. N., Great Falls, Mont.
GOOD, Robert Alan	U. of Minnesota	MB 1946	University Hospital, Minneapolis 14, Minn.
GORDON, Sewell S.	U. of Minnesota	MB 1942 MD 1943	5314 Wildair Drive, New Orleans, La.
GRAY, Cary Patton	U. of Oregon	MD 1943	102-110 2nd Ave. S.W., Rochester, Minn.
HALL, Wilson Benjamin	U. of Minnesota	MB 1943 MD 1944	Veterans Administration Hospital, St. Cloud, Minn.
HENNESSY, Mary Ellen	U. of Iowa	MD 1943	102-110 2nd Ave. S.W., Rochester, Minn.
HERMANN, Harold Wesley	U. of Minnesota	MB 1946	Caledonia, Minn.
HIESTAND, Harley Burmond	Indiana U.	MD 1942	2455 N. W. Marshall St., Portland 10, Ore.
HOGBEN, Charles Adrian Michael	U. of Wisconsin	MD 1943	102-110 2nd Ave. S.W., Rochester, Minn.
HUFF, Stanley Eugene	Northwestern U.	MB 1943 MD 1944	686 Fairmount Ave., Saint Paul 5, Minn.
HURSH, Philip Warner	U. of Minnesota	MB 1943 MD 1943	2507 Nicollet Ave., Minneapolis, Minn.
JACKSON, Alfred Edison	U. of Tennessee	MD 1942	102 110 2nd Ave. S.W., Rochester, Minn.
JENSEN, Richard Edmund	U. of Minnesota	MB 1946	St. Mary's Hospital, Duluth, Minn.
KELLY, JR., Charles Michael	U. of Minnesota	MB 1946	Cook County Hospital, Chicago, Ill.
LEDEN, Ursula Maria	Loyola U.	MD 1944	102-110 2nd Ave. S.W., Rochester, Minn.
LEE, Richard Harmer	U. of Minnesota	MB 1946	University Hospital, Iowa City, Ia.
McINTIRE, Scott Ferguson	U. of Minnesota	MB 1946	3027 Humboldt Ave. S., Minneapolis, Minn.
MALUF, Noble Suydam Rustum	Harvard	MD 1946	University of Louisville, Louisville 2, Ky.
MANN, Joseph Daniel	U. of Minnesota	MB 1946	Strong Memorial Hospital, Rochester, N. Y.
MARSHALL, Clark MacKenzie	U. of Minnesota	MB 1944 MD 1945	Northwestern Hospital, Minneapolis, Minn.
MERRILL, Joseph Grant	U. of Illinois	MD 1943	102-110 2nd Ave. S.W., Rochester, Minn.
MILLER, Albert Gordon	U. of Minnesota	MB 1946	University of Minnesota Hospital, Minneapolis, Minn.
MINKOWSKI, William Louis	U. of Minnesota	MB 1943 MD 1943	Veterans Administration Hospital, Department of Medicine, Kingsbridge Rd., Bronx, N. Y.
PETERSON, Oliver Hugh, Jr.	U. of Minnesota	MB 1946	Minneapolis General Hospital, Minneapolis 15, Minn.
PUTMAN, JR., Harrison C.	Northwestern U.	MB 1942 MD 1943	Mayo Clinic, Rochester, Minn.
RIDLEY, Roger William	U. of Michigan	MD 1943	Mayo Clinic, Rochester, Minn.

Name	*School*		*Address*
SHERMAN, Morris Hyman	U. of Minnesota	MB 1946	Kings County Hospital, 451 Clarkson Ave., Brooklyn, N. Y.
SUNDBERG, Carol Listmann	Northwestern U.	MB 1942 MD 1943	Mayo Clinic, Rochester, Minn.
SWANSON, Lawrence John	U. of Minnesota	MB 1946	159 N. Concord, South Saint Paul, Minn.
UPSHAW, Jackson Ewell	U. of Texas	MD 1942	102-110 2nd Ave. S.W., Rochester, Minn.
WAKSMAN, Byron Halsted	U. of Pennsylvania	MD 1943	102-110 2nd Ave. S.W., Rochester, Minn.
WANG, Jun-Ch'uan	U. of Minnesota	MB 1946 MD 1946	Mayo Clinic, Rochester, Minn.
WATTS, William E.	Harvard U.	MD 1942	Mayo Clinic, Rochester, Minn.
WOLFE, Lawrence Irving	U. of Minnesota	MB 1946	Ancker Hospital, Saint Paul 1, Minn.
WOODARD, Don Ernest	U. of Chicago	MD 1941	102-110 2nd Ave. S.W., Rochester, Minn.
ZINBERG, Samuel	U. of Minnesota	MB 1946	2012 Plymouth Ave., Minneapolis, Minn.

Reciprocity Candidates

COLFER, Harry Francis Andrus	Marquette U.	MD 1943	Mayo Clinic, Rochester, Minn.
DUGGAN, Asa Daniel	U. of Georgia	MD 1940	Mayo Clinic, Rochester, Minn.
EARNEST, III, Franklin	Jefferson Med. Col.	MD 1943	Mayo Clinic, Rochester, Minn.
ERB, Howard Renninger	U. of Pennsylvania	MD 1940	Mayo Clinic, Rochester, Minn.
FISHER, Robert George	U. of Pennsylvania	MD 1942	Mayo Clinic, Rochester, Minn.
GERACI, Joseph Emil	Marquette	MD 1942	Mayo Clinic, Rochester, Minn.
HAY, Samuel Hutson	Vanderbilt U.	MD 1940	Mayo Clinic, Rochester, Minn.
MARTENS, Irvin Joseph	St. Louis U.	MD 1943	Mayo Clinic, Rochester, Minn.
MILLER, John Ralph	Northwestern	MB 1935 MD 1936	Mayo Clinic, Rochester, Minn.
MUCCILLI, Albert Carl	Marquette U.	MD 1944	616 W. 3rd St., Duluth 6, Minn.
PERMAN, Harvey Henry	Washington U.	MD 1944	Wells, Minn.
POLLACK, Albert Abbot	Long Is. Col. of Med.	MD 1942	Mayo Clinic, Rochester, Minn.
RICKS, JR., Henry Crozier	Jefferson U.	MD 1944	Mayo Clinic, Rochester, Minn.
ROBINSON, William Click	Tulane U.	MD 1942	Mayo Clinic, Rochester, Minn.
SARGENT, Edward Chester, Jr.	Western Reserve U.	MD 1942	University Hospital, Minneapolis 14, Minn.
SCHLOTTER, Donald Cornelius	U. of Pennsylvania	MD 1937	Mayo Clinic, Rochester, Minn.
WILLIS, J., Theron	Louisiana State U.	MD 1942	Mayo Clinic, Rochester, Minn.
WILSEY, David Brown	U. of Wisconsin	MD 1939	Department of Anesthesiology, University Hospital, Minneapolis 14, Minn.
WILSON, Russell H.	U. of Oklahoma	MD 1940	Veterans Hospital, Minneapolis, Minn.

National Board Candidates

CASHIN, John Carney	McGill U.	MD 1943	Mayo Clinic, Rochester, Minn.
CHILDS, Donald Smythe, Jr.	Yale U.	MD 1942	Mayo Clinic, Rochester, Minn.
CIARAMELLI, Margherita Carmela	New York U.	MD 1943	Flower and Fifth Avenue Hosp., Fifth Ave. and 106 St., New York 29, N. Y.
DOLMAGE, George Howard	U. of Iowa	MD 1937	University Hospital, Minneapolis 14, Minn.
HOLCOMB, William Decker	Boston U.	MD 1935	Abbott Hospital, Minneapolis 4, Minn.
HORNING, Edward Douglas	Yale U.	MD 1943	Mayo Clinic, Rochester, Minn.
NACHTWEY, Robert Augustine	St. Louis U.	MD 1940	Mayo Clinic, Rochester, Minn.
TOWER, Donald Bayley	Harvard U.	MD 1944	Montreal Neurological Institute, McGill University, Montreal, Canada

PHYSICIANS LICENSED FEBRUARY 20, 1947

January Examination

National Board Candidate

Name	*School*		*Address*
ZORN, Eugene Laird	New York Med. Col.	MD 1941	Erskine, Minn.

Reciprocity Candidate

GRIFFIN, Richard Philip	U. of Iowa	MD 1944	111 S. 13th St., Benson, Minn.

PHYSICIANS LICENSED MAY 16, 1947

April Examination

Name	*School*		*Address*
BAGBY, George W.	Temple U.	MD 1946	Cannon Falls, Minn.
BARTNESS, John	Marquette U.	MD 1946	1501 E. 7th St., Superior, Wis.
BORGERSON, Robert James	U. of Illinois	MD 1943	Richland Center, Wis.
COLEMAN, John Ballinger	Northwestern U.	MB 1942	University of Minnesota Hospital, Dept. Radiology, Minneapolis 14, Minn.
COLL, James Joseph	Jefferson Med. Col.	MD 1939	Duluth Clinic, Duluth, Minn.

Name	*School*		*Address*
DIESSNER, Ardell William	U. of Minnesota	MB 1946	Northwestern Hospital, Minneapolis, Minn.
EICHHORN, JR., Edmund Peter	U. of Minnesota	MB 1943 MD 1943	402 W. Franklin, Minneapolis, Minn.
EMMONS, Robert Wayne	Indiana U.	MD 1942	957 Arcade St., Saint Paul, Minn.
ERCHUL, James William	U. of Minnesota	MB 1946	St. Mary's Hospital, Duluth, Minn.
FLOM, Reynold Phillip	U. of Minnesota	MB 1944 MD 1945	1124 Lowry Med. Arts, Bldg., Saint Paul, Minn.
FORD, Floyd Wendell	Col. of Med. Evangelists	MD 1947	915 NE Portland Blvd., Portland 11, Ore.
FRICKE, Raymond Woodrow	Northwestern U.	MB 1942 MD 1943	Mayo Clinic, Rochester, Minn.
GALLAGHER, Robert Paul	U. of Minnesota	MB 1943 MD 1943	Ortonville, Minn.
GORDON, Ian Esar	U. of Toronto	MD 1939	University Hospital, Minneapolis 14, Minn.
HAMMARSTEN, James Francis	U. of Minnesota	MB 1944 MD 1945	Veterans Hospital, Minneapolis, Minn.
HENRY, Harold William	U. of Minnesota	MB 1946	St. Louis City Hospital, St. Louis, Mo.
HENRY, Joseph Edward	U. of Minnesota	MB 1946	Milaca, Minn.
KANTAR, Bruce Leo	U. of Minnesota	MB 1944 MD 1945	3521 W. 29th St., Minneapolis, Minn.
KING, JR., Lyndon Marrs	Columbia U.	MD 1943	Minneapolis General Hospital, Minneapolis 15, Minn.
KUSTERMANN, Stuart Dean	U. of Minnesota	MB 1946	1067 14th Ave. S.E., Minneapolis, Minn.
LANGE, Robert Dale	Washington U., Mo.	MD 1944	Glen Lake Sanatorium, Oak Terrace, Minn.
LENGBY, Frederick Alexander	U. of Minnesota	MB 1943 MD 1944	1618 Berkeley Ave., Saint Paul 5, Minn.
LINDEMANN, Chas. Edward	U. of Minnesota	MB 1946	Milwaukee County Hospital, Milwaukee, Wis.
LUNDQUIST, Virgil J. P.	U. of Minnesota	MB 1942 MD 1943	4439 Cedar Ave., Minneapolis 7, Minn.
MacDONALD, Frank McIntyre	U. of Minnesota	MB 1946	801 12th St. N., Virginia, Minn.
McCLUSKEY, William Richard	U. of Minnesota	MB 1946	4933 Girard Ave. S., Minneapolis 9, Minn.
MELGAARD, Sven Ross	Washington U., Mo.	MD 1942	University of Minnesota Hospital, Department of Anesthesia, Minneapolis 14, Minn.
MENEFEE, Edward Curial	U. of Minnesota	MB 1946	Detroit Receiving Hospital, Detroit, Mich.
MERCHANT, Chas. Claire	U. of Minnesota	MB 1946	Miller Hospital, Saint Paul 2, Minn.
MILLER, John Regis	U. of Pittsburgh	MD 1942	Mayo Clinic, Rochester, Minn.
MILLS, Melvin Duane	Temple U.	MD 1941	Mayo Clinic, Rochester, Minn.
MUSSEY, William Clive	U. of Minnesota	MB 1946 MD 1946	1031 10th St. S.W., Rochester, Minn.
NELSON, Loren Elmer	U. of Minnesota	MB 1946	Johns Hopkins Hospital, Baltimore 5, Md.
NEWBERRY, Truman Albert	U. of Minnesota	MB 1947	University of Michigan Hospital, Department of Surgery, Ann Arbor, Mich.
NORDIN, Charles Anton	U. of Minnesota	MB 1946 MD 1947	3313 University, Des Moines, Ia.
PAINE, Roy Joseph	McGill	MD 1940	Mayo Clinic, Rochester, Minn.
PEDERSEN, Robert Lundberg	U. of Minnesota	MB 1946 MD 1946	42 Meadow Lane, Tyrol Hills, Minneapolis, Minn.
PRIDGEN, James Edward	Tulane U.	MD 1943	Mayo Clinic, Rochester, Minn.
RAMES, Eugene Duston	Harvard	MD 1946	Student Health Sevice, University of Minnesota, Minneapolis, Minn.
SCHAEFER, JR., Robt. Lawrence	St. Louis U.	MD 1944	1204 Kales Bldg., Detroit, Mich.
SCHOCH, JR., Eugene Paul	U. of Texas	MD 1946	345 Med. Arts Bldg., Minneapolis, Minn.
SHAPIRO, Sidney Keith	U. of West. Ontario	MD 1943	University of Minnesota Hospital, Department of Neurology, Minneapolis 14 Minn.
SINCLAIR, William James	U. of Manitoba	MD 1943	622 7th Ave. S.E., Minneapolis, Minn.
STRANDJORD, Nels Magne	U. of Chicago	MD 1946	325 Warwick Ave., Oakland 10, Cal.
SUSSMAN, Arthur Howard	U. of West. Ontario	MD 1944	2800 Cedar Ave., Minneapolis, Minn.
WALSH, John Francis	Marquette	MD 1946	Olivia, Minn.
WATSON, Wm. Henry Angus	U. of Minnesota	MB 1946	2014 N. Emerson, Minneapolis, Minn.
WORDEN, Ralph Edwin	U. of Nebraska	MD 1944	Mayo Clinic, Rochester, Minn.

Reciprocity Candidates

BARNO, Alex	U. of Oklahoma	MD 1944	3759 Washburn Ave. No., Minneapolis, Minn.
CHAPMAN, Carrie Ethelyn	Tufts College Med.	MD 1934	Mayo Clinic, Rochester, Minn.
DeLAMATER, Edward Doane	Columbia U. Col. of Phys. and Surg.	MD 1942	Mayo Clinic, Rochester, Minn.
HOLMAN, Colin Baker	U. of Pennsylvania	MD 1943	Mayo Clinic, Rochester, Minn.
HOWELL, Roger William	U. of Michigan	MD 1938	University Hospital, Minneapolis 14, Minn.
LOWY, JR., Alexander D.	U. of Pittsburgh	MD 1944	Mayo Clinic, Rochester, Minn.
MEDWICK, Joseph Xavior	Temple U.	MD 1941	Mayo Clinic, Rochester, Minn.
RICHARDSON, JR., Edward Jones	Johns-Hopkins	MD 1943	Ancker Hospital, Saint Paul, Minn.

Name	*School*		*Address*
ROEMMICH, William	U. of Colorado	MD 1945	Minneapolis Department of Health, 240 S. 4th St., Minneapolis 1, Minn.
RUCHIE, Warren Henry	St. Louis U.	MD 1946	1765 East Ave., Saint Paul 9, Minn.
SCHMITZ, Glenn Peter	St. Louis U.	MD 1944	Holdingford, Minn.
STAUFFER, Herbert Milton	Temple U.	MD 1939	University of Minnesota Medical School, Dept. Radiology, Minneapolis 14, Minn.
SWANSON, Robert Frank	Northwestern	MB 1942 MD 1943	1501 W. 6th St., Racine, Wis.
TAYLOR, Bowen Eacritt	U. of Nebraska	MD 1943	Mayo Clinic, Rochester, Minn.
UNDERWOOD, Laurence Joseph	U. of S. California	MD 1942	Mayo Clinic, Rochester, Minn.
VRTISKA, Frank Leonard	U. of Nebraska	MD 1944	101 7th Ave. S., St. Cloud, Minn.

National Board Candidates

BORDEN, Craig Warren	Harvard	MD 1941	Veterans Administration Hospital, Minneapolis 17, Minn.
BORGE, Henry J.	Northwestern	MB 1941 MD 1942	211 E. 2nd St., Hastings, Minn.
CHAPMAN, Carleton Burke	Harvard	MD 1941	Laboratory Physiological Hygiene, So. Stadium Tower, Minneapolis 14, Minn.
JOHNSON, Hugh Albert	Northwestern	MB 1943 MD 1943	Mayo Clinic, Rochester, Minn.
MC MANUS, William Flynn	Loyola U.	MD 1939	Princeton, Minn.
MESSINGER, Roy Franklin	Col. of Med. Evan.	MD 1936	5000 Lankershim Blvd., North Hollywood, Calif.
PALAZZO, Frank	St. Louis U.	MD 1943	Mayo Clinic, Rochester, Minn.
PARKINSON, Dwight	McGill	MD 1941	Mayo Clinic, Rochester, Minn.
SPENCER, John Robert	Harvard	MD 1943	Mayo Clinic, Rochester, Minn.
STORRS, Richard Paul	Columbia	MD 1942	Mayo Clinic, Rochester, Minn.
TOBIN, John Dudley	Yale U.	MD 1939	301 Kenwood Parkway, Minneapolis, Minn.
WESSEL, Morris Arthur	Yale U.	MD 1943	Mayo Clinic, Rochester, Minn.
WOOD, Robert Allan	U. of Minnesota	MD 1945	701 Phys. & Surg. Bldg., Minneapolis 2, Minn.

PHYSICIAN LICENSED MAY 29, 1947, BY SPECIAL RECIPROCITY

April Examination

Name	*School*		*Address*
EUSTERMANN, John Joseph	Creighton U.	MD 1943	Mankato Clinic, Mankato, Minn.

PHYSICIANS LICENSED JULY 11, 1947

June Examination

Name	*School*		*Address*
ALLEN, Horace Ethan	U. of Michigan	MD 1940	Mayo Clinic, Rochester, Minn.
BETTS, Richard Arthur	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
BRADY, Joseph Augustine	U. of Pennsylvania	MD 1943	Mayo Clinic, Rochester, Minn.
CALLAGHAN, Mary Frances	U. of Kansas	MD 1944	416 Vancouver Block, Vancouver, Can.
COSGRIFF, James Arthur, Jr.	U. of Minnesota	MB 1946 MD 1946	Olivia, Minn.
CRUDO, Vincent Dominick	Marquette U.	MD 1946	Bethesda Hospital, Saint Paul, Minn.
FORTIER, Rene George	U. of Minnesota	MB 1942 MD 1943	Marble, Minn.
GEORGE, Robert Preston	Northwestern U.	MB 1943 MD 1944	Akron City Hospital, Akron, Ohio
GIBBONS, Thomas Bernard	U. of Minnesota	MB 1946	64 Commonwealth, Boston, Mass.
GRIFFITH, Eugene Russel	Northwestern U.	MB 1943 MD 1943	Mayo Clinic, Rochester, Minn.
HANLON, David Gregory	Jefferson Med. Col.	MD 1942	Mayo Clinic, Rochester, Minn.
HARVARD, Bell Marvin, Jr.	Tulane U.	MD 1939	Mayo Clinic, Rochester, Minn.
HETHERINGTON, John Arthur	Indiana U.	MD 1943	Mayo Clinic, Rochester, Minn.
HODAPP, Robert Vinton	U. of Minnesota	MB 1946 MD 1946	836 Ella Ave., Willmar, Minn.
JARRETT, Paul Stuart	Indiana U.	MD 1945	Mayo Clinic, Rochester, Minn
KLEIN, William A.	U. of Minnesota	MB 1935 MD 1936	704 Med. Arts Bldg., Duluth, Minn.
KOODA, Jennings C.	U. of Minnesota	MB 1946 MD 1946	Eagle Bend, Minn.
LOUISELL, James Michael	U. of Minnesota	MB 1944 MD 1945	14301 Glastonbury Road, Detroit 23, Mich.
LUTHER, Gertrude Catherine	U. of Wisconsin	MD 1944	Mayo Clinic, Rochester, Minn.
MURPHY, Maurice Hardy	Baylor U.	MD 1943	Mayo Clinic, Rochester, Minn.
PAAL, Dwain John	Marquette U.	MD 1946	St. Mary's Hospital, 2500 S. 6th St., Minneapolis, Minn.

Name	*School*		*Address*
PROUGH, Wendell Arthur	Indiana U.	MD 1942	Mayo Clinic, Rochester, Minn.
REIFEL, Albert Devine	U. of Minnesota	MB 1947	St. Luke's Hospital, Denver, Colo.
ROLLIE, Orris Oliver	U. of Illinois	MD 1946	1106 Summit Ave., Saint Paul 5, Minn.
ROUTLEY, Eric Francis	U. of Toronto	MD 1943	Mayo Clinic, Rochester, Minn.
SCHNEIDER, Edward Paul	St. Louis U.	MD 1942	Mayo Clinic, Rochester, Minn.
STILLWELL, George Keith	Queen's U.	MD 1942	c/o W. 300 University Hospital, Minneapolis, Minn.
TOBIN, John Robert, Jr.	U. Chicago-Rush	MD 1942	Mayo Clinic, Rochester, Minn.
THOM, John Girdwood	Georgetown U.	MD 1944	Mayo Clinic, Rochester, Minn.
THOMAS, Walton Dowdell	P. & S. Columbia	MD 1944	Mayo Clinic, Rochester, Minn.
UHLER, Walter Miller	Jefferson Med. Col.	MD 1943	Mayo Clinic, Rochester, Minn.
Reciprocity Candidates			
BARNES, Ben Cooke	U. of Pennsylvania	MD 1938	Mayo Clinic, Rochester, Minn.
CARTER, Herschel Gray	U. of Oklahoma	MD 1943	1829 Med. Arts Bldg., Minneapolis, Minn.
CLARKE, James Yandes, Jr.	U. of Minnesota	MB 1941 MD 1941	St. Joseph's Hospital, Saint Paul, Minn.
COLE, John Robert	St. Louis U.	MD 1943	213 Grand Ave. Bank Bldg., Saint Paul, Minn.
EISENMAN, Walter	U. of Michigan	MD 1944	Mesaba Clinic, Coleraine, Minn.
GULLORD, Edward George	Harvard U.	MD 1933	751 Med. Arts Bldg., Minneapolis, Minn.
KING, Nancy Burfoot	Med. Col. of Virginia	MD 1945	Mayo Clinic, Rochester, Minn.
KLEFSTAD, Lloyd Henry	Western Reserve	MD 1943	Greenbush, Minnesota
LAMONT, Charles Sloan	Georgetown U.	MD 1938	Mayo Clinic, Rochester, Minn.
PHILLIPS, Frederick E.	Wayne U.	MD 1946	Mora, Minn.
SCHMIDT, Hilmar Reinhold	Long Is. Col. of Med.	MD 1931	Winona General Hospital, Winona, Minn.
WILLIAMSON, Harold Allen	Western Reserve	MD 1941	Heron Lake, Minn.
WOOD, George Oviatt	Vanderbilt U.	MD 1938	Mayo Clinic, Rochester, Minn.
ZEIGLER, Charles McClellan Iseman	Temple U.	MD 1944	Pequot Lakes, Minn.
National Board Candidates			
HOWELL, Carter Wyckoff	Duke U.	MD 1943	Veterans Hospital, Minneapolis, Minn.
LOGAN, Arch Hodge, Jr.	U. of Chicago, Rush	MD 1942	Mayo Clinic, Rochester, Minn.
PAINTER, Robert Clayworth	U. of Chicago, Div. Biol. Sc.	MD 1941	Mayo Clinic, Rochester, Minn.
ROBERTS, Norbert J.	U. of Buffalo	MD 1940	Mayo Clinic, Rochester, Minn.
WILLIAMS, Charles Francis	U. of Chicago	MD 1942	University Hospital, Minneapolis 14, Minn.
WURDEMANN, Alma Louise	U. of Iowa	MD 1946	White Bear Lake, Minn.

PHYSICIAN LICENSED AUGUST 23, 1947, BY SPECIAL RECIPROCITY

June Examination

Name	*School*		*Address*
WOODS, Emile Bryant	St. Louis U.	MD 1927	Comm. Health Assn., Two Harbors, Minn.

PHYSICIANS LICENSED NOVEMBER 7, 1947

September Examination

Name	*School*		*Address*
ALBERS, Donald Dean	Northwestern U.	MB 1943 MD 1943	Mayo Clinic, Rochester, Minn.
ANDERSON, JR., Frank Joseph	U. of Minnesota	MB 1947	Swedish Hospital, Minneapolis, Minn.
BERENSON, Sheldon Ellis	U. of Minnesota	MB 1946	1809 Penn Ave. No., Minneapolis, Minn.
BILKA, Paul Joseph	Columbia Col. of Phys. and Surg.	MD 1943	Mayo Clinic, Rochester, Minn.
BOCK, William Ward	U. of Minnesota	MB 1947	1123 4th Ave. N. W., Rochester, Minn.
BORGESON, Harry Park	U. of Minnesota	MB 1947	Chisholm, Minn.
BOUTHILET, Florence Jacqueline	U. of Minnesota	MB 1947	1555 Fairmount Ave., Saint Paul 5, Minn.
BUGGY, William John	U. of Minnesota	MB 1947	Milwaukee Co. Hospital, Milwaukee, Wis.
BURICH, Harry Frank	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
BUSSMAN, John Wood	U. of Minnesota	MB 1947	Sioux Valley Hospital, Sioux Falls, S. D.
CAMPBELL, John Braxton Siebern	U. of Pennsylvania	MD 1942	626 Broadway, Cincinnati 2, Ohio
CEDARLEAF, Cherry Blossom	U. of Minnesota	MB 1947	Waterbury Hospital, Waterbury, Conn.
COTTER, Anne Kathryn	U. of Minnesota	MB 1947	Woman's Hospital, Detroit, Mich.
DAEHLIN, Rolf	U. of Minnesota	MB 1946	106 Union Ave. S., Fergus Falls, Minn.
DIEHL, Antoni Mills	U. of Minnesota	MB 1947	University of Michigan Hospital, Ann Arbor, Mich.
ENGELS, Edward Patrick	U. of Minnesota	MB 1947	Indianapolis General Hospital, Indianapolis, Ind.
FEIGAL, David William	U. of Minnesota	MB 1947	Ancker Hospital, Saint Paul, Minn.
FIDELMAN, Norman Edward	U. of Minnesota	MB 1947	Milwaukee Co. Hospital, Milwaukee, Wis.
FLINN, James Brainerd	U. of Minnesota	MB 1947	208 E. 3rd St., Redwood Falls, Minn.

Name	*School*		*Address*
GALLAGHER, William Bernard	U. of Minnesota	MB 1947	500 N. State St., Waseca, Minn.
GOMSI, Edwin Samuel	U. of Minnesota	MB 1947	R. 1, Box 252, Eveleth, Minn.
GORDON, George Benjamin	U. of Minnesota	MB 1946	3500 Dupont Ave. S., Minneapolis, Minn.
GORDON, Jack	U. of Minnesota	MB 1943 MD 1944	119 Anat. Bldg., University of Minnesota, Minneapolis 14, Minn.
GULL, Reuben	U. of Minnesota	MB 1947	Orange County General Hospital, Orange, Cal.
GUMPRECHT, Donald Max	U. of Minnesota	MB 1946 MD 1947	514 S. 3rd St., Bozeman, Mont.
HANSEN, Rollin Montell	U. of Minnesota	MB 1947	4517 2nd Ave. S., Minneapolis, Minn.
HANSON, LeRoy William	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
HARRINGTON, JR., Vernon Ashcraft	U. of Minnesota	MB 1947	St. Mary's Hospital, Duluth, Minn.
HAUSER, Paul John	U. of Minnesota	MB 1947	303 E. Superior St., Chicago, Ill.
HOSETH, Wayne Loren	U. of Minnesota	MB 1947	Milwaukee County Hospital, Milwaukee, Wis.
JOHNSON, Kenneth Eugene	U. of Minnesota	MB 1946	114 6th Ave., Helena, Mont.
KIRBY, JR., Thomas Joseph	Southwestern Med. Col.	MD 1944	Mayo Clinic, Rochester, Minn.
KLEIN, Morris	U. of Minnesota	MB 1947	2600 Plymouth Ave. N., Minneapolis, Minn.
KUDISH, Harold Gordon	U. of Minnesota	MB 1946 MD 1946	3451 Douglas Blvd., Chicago 23, Ill.
LARSON, Donald Myhren	U. of Minnesota	MB 1946	22 Park Lane, Minneapolis, Minn.
LILLEHEI, James Perry	U. of Minnesota	MB 1947	4601 Wooddale Ave. S., Minneapolis, Minn.
LIPSCHULTZ, Carl Edward	U. of Minnesota	MB 1947	2122 Hartford Ave., Saint Paul 5, Minn.
LUNDBLAD, Wilfred Milton	U. of Minnesota	MB 1947	3827 S. Zenith, Minneapolis 10, Minn.
MARTIN, Doreen Aprilla	U. of Minnesota	MB 1947	Grace Hospital, Detroit, Mich.
MELANDER, JR., Leonard	U. of Minnesota	MB 1947	1439 Hythe St., Saint Paul, Minn.
NELSON, William Calkins	U. of Minnesota	MB 1947	Amery, Wisconsin
OLSEN, Jack Gordon	U. of Minnesota	MB 1947	Swedish Hospital, Minneapolis, Minn.
OWENS, JR., Benjamin Peter Michael	U. of Minnesota	MB 1947	1102 E. Howard St., Hibbing, Minn.
PACIOTTI, Vincent James	U. of Minnesota	MB 1947	Box 508, Virginia, Minn.
ROSENBAUM, David Lawrence	U. of Minnesota	MB 1947	704 Delaware Ave., S. E., Minneapolis, Minn.
ROSSING, Robert Grangaard	U. of Minnesota	MB 1947	Sacred Heart, Minnesota
SCANDALIS, Paul Richard	U. of California	MB 1940	Mayo Clinic, Rochester, Minn.
SCHNEIDMAN, Harold M.	U. of Minnesota	MB 1947	University of Oklahoma Hospitals, Oklahoma City , Okla.
SHULDBERG, Arthur Bernard	U. of Minnesota	MB 1947	1307 N. Vincent Ave., Minneapolis 11, Minn.
SPANJERS, Arnold Joseph	U. of Minnesota	MB 1947	R. R. 2, Box 385, Excelsior, Minn.
STRANSKY, John Joseph	U. of Minnesota	MB 1947	612 E. Elm St., Owatonna, Minn.
STURGES, Robert Leon	U. of Minnesota	MB 1947	3441 Third Ave. S., Minneapolis, Minn.
TATKIN, Sylvan Oscar	U. of Minnesota	MB 1947	Marine Hosp., United States Public Health Service, Seattle, Wash.
TREGILGAS, Richard Boland	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
VERBY, JR., John Edward	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
VON DRASHEK, Stanley Carl	U. of Minnesota	MB 1947	209 5th Ave. W., Dickinson, N. D.
WATKINS, John Arthur	U. of Minnesota	MB 1947	Wm. J. Seymour Hospital, Eloise, Mich.
WEIL, JR., William Bachrach	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
WEIR, Matthew Just	U. of Minnesota	MB 1947	4548 Garfield, Minneapolis 9, Minn.
WEYHRAUCH, Robert A.	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
WHEELER, Robert William	U. of Minnesota	MB 1940 MD 1941	Veterans Hospital, Minneapolis, Minn.
WHITAKER, JR., John Louis	U. of Minnesota	MB 1947	1903 N. 82nd St., Seattle 3, Wash.
WICHELMAN, Delbert Frederick	U. of Minnesota	MB 1947	Gibbon, Minn.
YLITALO, William Henry	U. of Minnesota	MB 1945 MD 1946	2013 8th Ave. E., Hibbing, Minn.
YLVISAKER, John Richard	U. of Minnesota	MB 1947	Swanville, Minn.
ZUCKER, Martin L.	U. of Minnesota	MB 1947	802 Marshall Ave., Saint Paul, Minn.

Reciprocity Candidates

BAILEY, JR., John Holeman	U. of Pennsylvania	MD 1943	Mayo Clinic, Rochester, Minn.
DEDERICK, JR., Gerald Fisk	Med. Col. of Virginia	MD 1942	Mayo Clinic, Rochester, Minn.
ELLIOTT, JR., Joseph Alexander	U. of Michigan	MD 1944	Mayo Clinic, Rochester, Minn.
LONG, John Wade	Tulane U.	MD 1941	Mayo Clinic, Rochester, Minn.
SHRONTS, John Frank	Northwestern	MB 1935 MD 1936	General Mills Bldg., 400 2nd Ave. S., Minneapolis, Minn.
SLOAN, JR., Wyman Platt	Tulane U.	MD 1944	Mayo Clinic, Rochester, Minn.
TERRY, William Sanford	Med. Col. of Virginia	MD 1944	University of Minnesota Hospital, Department of Medicine, Minneapolis 14, Minn.
YEAKEL, JR., Earl Leroy	U. of Oklahoma	MD 1943	Mayo Clinic, Rochester, Minn.

PHYSICIANS LICENSED NOVEMBER 7, 1947

October Examination

Name	*School*		*Address*
BALLINGER, Carter Mitchell	U. of Iowa	MD 1945	Veterans Administration Hospital, St. Cloud, Minn.
BANK, Edward William	Northwestern U.	MB 1941 MD 1942	401 Med. Arts Bldg., Minneapolis 2, Minn.
BARRINGER, Phil Louis	Jefferson Med. Col.	MD 1942	Mayo Clinic, Rochester, Minn.
BAUER, Edward Gregory	U. of Minnesota	MB 1947	1221 Fifth St. S. E., Minneapolis, Minn.
BECK, JR., Wilford William	U. of Pennsylvania	MD 1934	Mayo Clinic, Rochester, Minn.
BEELER, John Watson	U. of Indiana	MD 1944	Mayo Clinic, Rochester, Minn.
BOFENKAMP, Benjamin	U. of Minnesota	MB 1943 MD 1943	University of Minnesota Medical School, Minneapolis 14, Minn.
BUTLER, Donald Bertrand	Northwestern U.	MB 1944 MD 1944	Mayo Clinic, Rochester, Minn.
CAMERON, Bruce Molloy	U. of Texas	MD 1944	Mayo Clinic, Rochester, Minn.
CORCORAN, JR., Charles Edward	Loyola U.	MD 1944	Mayo Clinic, Rochester, Minn.
CUSHING, Robert Louis	Creighton U.	MD 1939	503 Wash. Ave., Brainerd, Minn.
FLAUTT, JR., James Robert	U. of Tennessee	MD 1944	Mayo Clinic, Rochester, Minn.
FROKE, Leo Burton	Bowman Gray, N. C.	MD 1945	Veterans Hospital, St. Coud, Minn.
HALL, Barnard	U. of Oregon	MD 1942	90 Malcolm Ave. S.E., Minneapolis, Minn.
HAMEL, Joseph Ignatius	Marquette U.	MD 1946	St. Mary's Hospital, Minneapolis, Minn.
HARRIS, Lloyd Edwin	Rush U., Chicago	MD 1937	Mayo Clinic, Rochester, Minn.
HAYLES, Alvin Beasley	Wash. U., St. Louis	MD 1941	Mayo Clinic, Rochester, Minn.
KLEIN, Daniel William	U. of Minnesota	MB 1943 MD 1944	Preston, Minn.
LANG, Carl Millard	U. of Virginia	MD 1943	Mayo Clinic, Rochester, Minn.
LEWIS, Asle Kingsley	U. of Illinois	MD 1944	Dakota Clinic, 702 1st Ave. S., Fargo No. Dak.
LILLIE, Walter Irving	U. of Michigan	MD 1941	Mayo Clinic, Rochester, Minn.
MARSHALL, Thomas Milton	U. of Louisville, Ky.	MD 1941	Mayo Clinic, Rochester, Minn.
MESERVE, Francis Bruce	U. of Minnesota	MB 1945 MD 1946	207 Troup St., Bowling Green, Ohio
MILBURN, Graham Burton	U. of Pennsylvania	MD 1942	Mayo Clinic, Rochester, Minn.
NELSON, Luther Arnold	U. of Minnesota	MB 1947	Bethesda Hospital, Saint Paul, Minn.
O'LOUGHLIN, Bernard James	Creighton U.	MD 1942	Veterans Hospital, Minneapolis, Minn.
PETERSON, Clifton Robert	U. of Minnesota	MB 1947	2617 Clinton Ave. So., Minneapolis, Minn.
PICK, James William	Northwestern U.	MB 1940 MD 1941	Mayo Clinic, Rochester, Minn.
PIERCE, Robert B.	U. of Minnesota	MB 1943 MD 1944	Wadena Clinic, Wadena, Minn.
RATHKEY, Arthur Stanley	U. of Oregon	MD 1947	Minneapolis General Hospital, Minneapolis Minn.
REYNOLDS, John Lucien	Stanford	MD 1941	Mayo Clinic, Rochester, Minn.
RICE, Frank Blair	U. of Minnesota	MB 1947	St. Mary's Hospital, Minneapolis, Minn.
ROBINETT, Robert William	Western Reserve	MD 1943	230 Oak Grove St., Minneapolis 4, Minn.
ROBINSON, Stuart Cooper	U. of Toronto	MD 1944	Box 45, Creighton Mine, Ontario, Can.
SETTIMI, Albino Luciano	U. of Minnesota	MB 1947	Milwaukee County Hospital, Milwaukee, Wis.
SHOOK, Lester Dale	U. of Illinois	MD 1947	1012 Thomas Ave., Saint Paul 4, Minn.
SMERSH, JR., Jerome Francis	U. of Minnesota	MB 1947	Milwaukee County Hospital, Milwaukee, Wis.
SMITH, Don Vernon	Northwestern U.	MB 1943 MD 1944	Eitel Hospital, 14th and Willow, Minneapolis, Minn.
STAUB, Henry Paul	U. of Illinois	MD 1947	Minneapolis General Hospital, Minneapolis, Minn.
STUEN, Marcus Rodway	Marquette U.	MD 1946	Parkland, Wash.
SUTHERLAND, Walter Hugh	Col. of Med. Evang.	MD 1945	104 14 St. N., Benson, Minn.
TAM, Ernest Chun-seck	U. of Minnesota	MB 1947	Milwaukee County Hospital, Milwaukee, Wis.
TATUM, Donald Edward	U. of Oregon	MD 1947	St. Joseph's Hospital, Saint Paul, Minn.
TEBERG, Mary Hilbert	U. of Minnesota	MB 1947	Minneapolis General Hospital, Minneapolis 15, Minn.
THORSON, Stuart Verne	U. of Minnesota	MB 1945 MD 1946	5036 39th Ave. S., Minneapolis, Minn.
TONDREAU, Roderick Louis	U. of Pennsylvania	MD 1940	Mayo Clinic, Rochester, Minn.
VIRNIG, Richard Peter	U. of Minnesota	MB 1941 MD 1942	Wells, Minn.
WALPOLE, Stewart Hewes	Northwestern U.	MB 1937 MD 1938	305 East Ave., Park Ridge, Ill.
WESOLOWSKI, Stanley P.	Loyola U.	MD 1943	University of Minnesota Hospital, Minneapolis 14, Minn.

Reciprocity Candidates

BLUNT, III, Charles Porter	Med. Col. of Virginia	MD 1943	Mayo Clinic, Rochester, Minn.
FRASER, Alexander Frank	N. Y. U. Med. Col.	MD 1940	Lynde Clinic, Thief River Falls, Minn.
HEISLER, John Joseph	Temple U.	MD 1946	2135 James Ave., Saint Paul 5, Minn.

Name	*School*		*Address*
HUGHES, Jack	U. of Pennsylvania	MD 1943	228 Lowry Med. Arts Bldg., Saint Paul 2, Minn.
KIRTLAND, JR., William Beebe	Wayne U.	MB 1942 MD 1943	Lenont-Peterson Clinic, 401 1st St. S., Virginia, Minn.
LIMBACHER, Henry Phillip	Ohio State U.	MD 1938	Cleveland State Hospital, Cleveland, Ohio
MAINO, Vernon Joseph	Stanford U.	MD 1943	Mayo Clinic, Rochester, Minn.
McCORKLE, James Kenneth	McGill U., Montreal	MD 1940	Mayo Clinic, Rochester, Minn.
MOORE, Irvin Harlow	U. of Iowa	MD 1939	148 Summit Ave., Saint Paul, Minn.
MORRIS, Charles Rudolph	U. of Wisconsin	MD 1941	Mayo Clinic, Rochester, Minn.
MUEHLIG, Wilbur Andrew	U. of Michigan	MD 1935	Medical Arts Bldg., Omaha, Nebr.
NICHOLS, Dean	Yale U.	MD 1942	Suite 1, Gold Block, Helena, Mont.
NOGUCHI, Sugi	U. of Colorado	MD 1943	Carleton College, Northfield, Minn.
ReMINE, JR., William Hervey	Med. Col. of Virginia	MD 1943	Mayo Clinic, Rochester, Minn.
SAYLOR, JR., Howard LeRoy	Northwestern U.	MB 1943 MD 1943	Mayo Clinic, Rochester, Minn.
SPAULDING, JR., Clarence Arthur	Stanford U.	MD 1943	Mayo Foundation, Rochester, Minn.
WALDER, Harold J.	New York Med. Col.	MD 1939	Duluth Clinic, Duluth, Minn.
WYNSEN, Henry James	Loyola U.	MD 1941	531 S. Clover St., Fremont, Ohio
YOUNGSTROM, Clarence Swan	U. of Nebraska	MD 1938	Ortonville, Minn.

National Board Candidates

BARRETT, John Lee	Duke U.	MD 1943	6941 Sheridan Ave., Minneapolis, Minn.
COMLY, Hunter Hall	Yale U.	MD 1943	University of Minnesota, Department of Pediatrics, Minneapolis 14, Minn.
MAY, Charles Davidson	Harvard U.	MD 1936	University of Minnesota Hospital, Minneapolis 14, Minn.
OLSON, Lillian Agnes	U. of Minnesota	MB 1935 MD 1936	State Sanatorium, Ah-gwah-ching, Minn.
RYDELL, John Robert	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
TUCKER, William Boose	U. of Chicago	MD 1934	3612 46 Ave. So., Minneapolis, Minn.
WEBER, Lowell Wyckoff	U. of Illinois	MD 1946	Havana, North Dakota
WOLFF, Helen Berman	Stanford U.	MD 1947	109 Lake Ave., Worthington, Minn.

Former Minneapolis Abortionist Sentenced to Two Years in Federal Prison

(Continued from Page 403)

on which date Beckman entered a plea of guilty to an information charging him with the crime of abortion.

At the time Beckman pleaded guilty to abortion in the District Court of Hennepin County, he was on probation in the United States District Court because of his failure to report for induction into the United States Army. That probation was imposed by Judge Joyce, on October 13, 1942, on which date Beckman was sentenced to a term of three years in a penitentiary type institution for violating the Selective Service Act. On the same date Judge Joyce suspended for five years the imposition of sentence on Beckman for a second indictment charging him with failure to report for induction into the United States Army. Beckman served part of the three-year sentence at Leavenworth, Kansas, and Sandstone, Minnesota. He was released on parole December 14, 1944, so that he could join the United States Army. Beckman remained in the Army but a short period of time and received a medical discharge. Since then he has been receiving a pension of $69.00 a month from the Government for his army service following a claim of a heart ailment. Beckman violated his probation in Federal Court by being convicted of the abortion charge in November, 1945. No action was taken by the Court on revoking Beckman's probation until he served his full sentence on the abortion charge.

On March 16, 1948, when Judge Joyce revoked Beckman's probation, the Court told Beckman that engaging in the abortion racket was "one of the rottenest lines that a man could engage in." In reviewing Beckman's long criminal record dating back to 1931, when he was arrested for stealing from a Minneapolis department store, Judge Joyce stated that "not one single item of proof that there is any good in this man" had been offered to the Court. Beckman never was licensed to practice any form of healing in the State of Minnesota.

Minneapolis Surgical Society

Meeting of December 4, 1947

Dr. L. Haynes Fowler, Presiding

VAGOTOMY IN THE TREATMENT OF IDIOPATHIC ULCERATIVE COLITIS AND REGIONAL ENTERITIS

CLARENCE DENNIS, M.D., FRANK D. EDDY, M.D., and DARRELL WESTOVER, M.D.
Minneapolis, Minnesota

(This paper was published in the March, 1948, issue of MINNESOTA MEDICINE, page 253.)

CONGENITAL CYSTS AND FISTULAS OF THE NECK
With Case Reports

WILLIAM H. RUCKER, M.D., F.A.C.S.
Minneapolis, Minnesota

Congenital cysts and fistulas of the neck are interesting surgical problems. A knowledge of the embryology and anatomy of the cervical region is necessary for their recognition as well as the delicate dissections required for their adequate removal. This treatise concerns itself with a discussion of a number of these anomalies and the reporting of one case of each type.

Thyroglossal Duct Cysts and Fistulas

The thyroglossal cyst has its origin in a duct which arises at the foramen cecum in the embryo, passes down through the base of the tongue, over, through, or under the hyoid bone, and into the neck to form the isthmus of the thyroid gland. When this duct does not become obliterated, a cyst may result from the secretion of its epithelial lining. Commonly this occurs below the hyoid bone, but at times above it, and in a few cases just below the foramen cecum.

One is usually consulted by a young person who wishes a lump removed from the neck for cosmetic reasons. On examination, a round or ovoid cystic feeling tumor, ordinarily about the size of a walnut, is found just inferior to the hyoid bone in the mid-line, or occasionally to one side. There is no tenderness unless inflammation is present, which is uncommon unless aspiration or incision has superimposed infection. Less often, a cyst is seen above the hyoid bone, which is frequently larger and appears as a soft tumor in the mid-line beneath the chin, at times protruding into the floor of the mouth, but producing few symptoms. On rare occasions, a cyst may bulge the tongue in the region of the foramen cecum and interfere with deglutition and respiration.

The differential diagnosis of these lesions is ordinarily not difficult, but epidermoids, branchial cysts, thyroid cysts, and aberrant thyroids must be considered. Epidermoids are attached intimately to the skin and do not move with deglutition. The relationship of branchial cysts to the sternomastoid muscle should distinguish them, as thyroglossal duct cysts rarely extend to this muscle. Thyroid cysts are connected commonly with the thyroid gland, but aberrant thyroid tissue may be located anywhere along the course of the thyroglossal tract and may be impossible to differentiate. Infection may confuse the diagnosis.

Thyroglossal duct cysts are freely moveable beneath the prethyroid muscles except at their base where the duct passes to the hyoid bone. They are smooth walled and contain a mucoid material, unless infected, when granulation tissue and pus may be present. They may be lined with flat or cuboidal epithelium, and papillary projections may be found. Many times no epithelium is seen.

Thyroglossal duct fistulas practically all occur as a result of infected thyroglossal cysts and the procedures incident to their treatment. In rare cases they are present from birth and appear as small openings in the mid-line of the neck below the cricoid cartilage, discharging intermittently or continuously a mucoid or purulent material. They are lined with squamous epithelium.

Total excision is the only satisfactory treatment for these cysts and fistulas. They will recur if portions of the cyst wall, duct, or diverticuli from the duct have not been removed. The procedure reported by Sistrunk[14 15] in 1920 has been uniformly successful. This operation consists in dissecting free the cyst to its base, excising a portion of the hyoid bone, and the tract *en bloc* in a 45 degree angle to the base of the tongue.

Case Report

A fourteen-year-old boy was admitted to the hospital January 8, 1939, for the removal of a tumor which had been present on his neck for three months. He stated he had first noticed the lump in the fall of 1938 and that it had gradually increased in size. It had caused him no discomfort, but he wished it removed because "it looked bad."

Physical examination revealed a rather tense cystic-feeling tumor, about the size of a walnut, on the left side of his neck over the cornu of the hyoid bone. The skin was freely moveable over it, and it moved up and down as the patient swallowed. There was no tenderness nor other evidence of infection.

A diagnosis of thyroglossal cyst was made and operation performed on January 9, 1939. The Sistrunk operation was used. An uneventful recovery took place, and there has been no recurrence.

The report of the pathologist revealed a 2-centimeter cyst filled with mucus. Microscopically a fibrous wall was found with no apparent epithelial lining, but lymphocytes and pus cells infiltrated the wall and at one point an irregular gland lined with epithelium was found.

Branchial Cysts

The origin of branchial cysts and fistulas is still controversial. In 1832, Ascherson[3] suggested that they probably arose from the branchial apparatus, and in the late 1800's through the writings of Heusinger and Senn,[9] they became known as branchial cysts and fistulas. However, Wenglowski[19] in 1912, after the study of seventy-five embryos and five years' work, asserted that these lesions did not arise directly from the branchial clefts but from the primordium of the thymus. He stated that the branchial clefts were only involved in the development of the head and upper neck and that they could have nothing to do with any defect below the hyoid bone. He concluded that these cysts and fistulas arise from the thymic ducts which have their origin in the third branchial pouch. In 1932, Meyer[12] reviewed Wenglowski's work and agreed with him. Nevertheless, many prominent authors are satisfied with the concept of their branchiogenic origin. They argue that the course of the branchial fistula is incompatible with the route of the thymo-pharyngeal duct—the fistula passing anterior to the hypoglossal nerve and between the external and internal carotid arteries, and the duct passing posterior to the internal carotid and inferior to the nerve[11]—that none of these anomalies have ever been found in the mediastinum in the region of the thymus;[7] that cartilagenous auricles occur in the lower neck and are undoubtedly remnants from the branchial apparatus;[4,15] and that at two months in the embryo the branchial apparatus has disappeared, so that it cannot be definitely stated that the hyoid bone marks its lower limits.[15]

Branchial cysts are deep-seated globular tumors which occur along the anterior margin of the sternomastoid muscle, usually under the angle of the jaw. They may bulge into the floor of the mouth, extend under the sternomastoid and even appear posterior, or continue along its anterior border and result in considerable enlargement of the neck. They are usually not evident until adult age, in spite of their congenital origin, and often become more prominent after an upper respiratory infection. They may occur on either side of the neck, usually grow slowly, unless infected or traumatized, and may be present for many years before medical advice is sought. These lesions may become spontaneously infected, but more often infection follows inadvertant incision. To palpation, they are smooth and cystic, or hard, depending upon their content, which may be either fluid or cheesy. They do not transilluminate, and unless inflammation has been present, they are moveable beneath the skin.

Branchial cysts must be differentiated from tuberculous lymph glands, cold abscesses, suppurating lymph glands, dermoid cysts, hygromas, aberrant thyroids, lipomas, hemangiomas, neurofibromas, metastatic nodes, aneurysms and carotid body tumors. Diagnosis can usually be made by a careful history, a thorough physical examination, aspiration, and x-ray study. The history will often reveal points of diagnostic value. On physical examination, the relationship of the branchial cyst to the sternomastoid muscle, its nonadherency to the skin, its opaqueness to transillumination, and its tense cystic consistency with no pulsation will be distinguishing factors. Aspiration is a helpful differential procedure. Bailey[4] states that the presence of cholesterol crystals in the aspirated fluid will always demonstrate a branchial cyst. Wangensteen[18] reports the shimmer or yellowish sheen of the fluid in a basin is characteristic. Wangensteen also found that he could differentiate these cysts from tuberculous glands by x-raying them after the injection of an opaque material.

Bailey[4] classified branchial cysts into four types, using as a basis their relationship to other structures of the neck: Type I lying just below the cervical fascia at the anterior border of the sternomastoid, its center just opposite the great cornu of the hyoid bone; Type II, the most common, lying on the internal jugular vein; Type III extending between the internal and external carotid arteries towards the pharynx and at times even to the base of the skull; Type IV, the columnar lined cysts, lying in contact with the pharynx but giving rise to no symptoms.

Neel and Pemberton[13] state branchial cysts vary in size from .1 centimeter to more than 10 centimeters and that they have walls varying in thickness from 1 millimeter to 1 centimeter. They are ovoid or spherical shaped tumors, usually lined with squamous, but occasionally with columnar epithelium. Their content may be clear, milky or cheeselike, but it always contains cholesterol.

The treatment is surgical removal. Through a transverse incision, which follows a natural crease in the neck, the skin and platysma muscle are sectioned and pulled aside. The fascia is cut and the sternomastoid retracted, or incised if necessary. The cyst should not be ruptured. Bailey[4] advises partial aspiration and then grasping the wall with a sponge holder with gauze between the rings. Great care must be exercised as one proceeds, as these cysts are often adherent to the jugular and carotids, near the hypoglossal and glossopharyngeal nerves, and sometimes in contact with the pharynx in the tonsil area. All of the cyst wall must be removed or destroyed to prevent recurrence.

Case Report

On June 21, 1943, a negro, fifty-four years of age, was seen because of a mass on the left side of his neck—a growth that had been present for six weeks had gradually increased in size, but had caused no symptoms. He had had two x-ray treatments.

An ovoid tumor about the size of an egg was present at the anterior edge and under the left sternomastoid muscle, about an inch below the angle of the jaw. Palpation elicited a hard tumor adherent to surrounding tissue. There was a moderate redness and induration of the overlying skin from the x-ray therapy. The patient's temperature was normal and other findings were unimportant.

Operation was performed June 22. A transverse incision was made over the mass. It was found adherent to the sternomastoid muscle, making it necessary to split and dissect the muscle from the tumor's surface. It was also fused to the deeper structures and could not be removed intact. As it was opened, a milky purulent material exuded. The cyst wall was stripped away and the cavity cauterized with phenol. A drain was inserted and the wound was closed.

Sections of the cyst wall showed fibrous tissue with chronic inflammation and granulations infected with pus

Swabs of the contents taken at operation showed hemolytic streptococci.

The patient made an uneventful recovery and has had no recurrence to date.

Branchial Fistulas

Branchial fistulas may be present at birth or may occur as the result of incising a branchial cyst. Three types are found: the complete type, where the fistula has an internal opening in the pharynx and an external opening along the anterior border of the sternomastoid; the internal type, which opens in the pharynx; and the external type, which has only an external orifice. They are usually unilateral but may occur on both sides of the neck. When these fistulas arise from the first branchial cleft, their openings are on or near the ear, ordinarily incomplete, and causing no symptoms except slight intermittent drainage.

Branchial fistulas from the cervical sinus or thymic duct are practically always located in the lower third of the neck with their external opening along the anterior border of the sternomastoid muscle and their inner sinus in the posterior pillar of the tonsil. They are prone to excrete intermittently a mucoid fluid except when infection causes a purulent discharge. They are lined with squamous or cuboidal epithelium.

Diagnosis presents no problem. Treatment consists in removal of the complete tract when inflammation has subsided. X-ray after the injection of opaque media is valuable in demonstrating the course of the lesion. Yoerg[20] has discovered a helpful procedure which is adaptable to any fistulous tract and valuable here. If, following the injection of lipiodol, methylene blue is injected, a bluish-black substance is fixed in the fistulous wall and dissection is greatly facilitated. However, these tracts hold only a small amount of solution and one must be careful not to rupture them and force the dye into the surrounding tissues.

As vertical incisions in the neck often leave ugly scars, a transverse elliptical incision should be made about the fistulous opening, and the tract followed up over the prethyroid muscles and then deeply over the hypoglossal nerve and between the internal and external carotid arteries towards the pharynx. Dissection should be carried as far as safely possible and the stump ligated, excised, and cauterized. Von Hacker's or Koenig's methods of inverting the stump into the pharynx are probably not necessary, if the stump is short. Usually one incision in the skin, if widely retracted, will suffice, but if necessary, another steplike transverse incision may be made above and the dissection carried on from there.

Report of a Case with Bilateral Cervical Fistulas and an Auricular Sinus

History.—On July 9, 1947, a sixteen-year-old girl entered the hospital because of fistulas which had been present on either side of her neck since birth. The one on the right had intermittently swelled and discharged a creamy material. From the one on the left she noted in rare instances a drop or two of clear fluid, but no swelling or irritation. In front of her left ear a small opening had been noticed from birth but had caused her no concern.

Physical examination.—On the right side of the neck, 5 centimeters from the sternal notch, at the medial margin of the sternomastoid muscle, there was a small sinus from which could be expressed a whitish creamy material. There was no swelling, redness or evidence of inflammation. Along the medial border of the left sternomastoid muscle, 2.5 centimeters from the sternal notch, there was a small fistulous opening emitting no discharge and not infected. Just anterior to the helix of the left ear, there was a small nondraining sinus 1 centimeter in depth. Her tonsils had been removed. Internal fistulous openings could not be found in the posterior pillars. X-ray examination after injection of pantopaque revealed fistulas.

Operation.—On July 10, lipiodal and methylene blue were injected into the right fistulous tract. An elliptical incision was made about the opening, and the dye-stained tract was dissected up between the branches of the carotid artery to the tonsil area where it was ligated and excised. A small rubber drain was inserted, the wound closed and layers with clips adapting the skin margins. Healing was prompt and a fine linear scar resulted.

Pathological Report.—The specimen consisted of a branchial fistula removed intact. It was covered by skin and measured 6 by 1 centimeters. The fistulous tract was elongated and showed no definite cystic dilatation. It had been injected with methylene blue.

Operation.—On August 12, 1947, the fistulous tract on the left was removed in a similar manner. However, as it was located lower in the neck and hence was longer, another steplike incision above was necessitated for its complete removal. Recovery was rapid and the scar was good.

Pathological Report.—The specimen consisted of a portion of the skin from the neck, attached to which was an elongated portion of tissue stained with methylene blue, resembling a sinus tract. Microscopic sections of the sinus showed it to be lined by noncornified epithelium, surrounded by a few lymphocytes, muscle and connective tissue. There was no evidence of malignancy. Diagnosis: Branchial fistula of the neck.

Cystic Hygroma

Cystic hygromas are comparatively rare. Although Gross and Goeringer[8] reported twenty-seven cases in 1939, they could find only about 225 cases, including theirs, in the literature at that time.

These cystic tumors are of lymphoid origin and arise from the embryological jugular and subclavian lymph sacs, anlagen of the cervical lymphatic system. Normally these sacs send out branches which anastomose with other branches from similar sacs in the pelvic, abdominal, and thoracic regions, to form the lymphatic system. Sabin[14] believes the sacs are off-shoots of the venous system while Huntington[10] asserts they develop from mesenchymal tissues. Whatever their origin, there is general agreement that the hygroma arises from disconnected portions of these sacs which continue to grow by sending out endothelial cords between tissues of the neck, these cords later acquiring lumen which fill with lymphlike fluid. As the jugular sac extends from the jugular foramen to the subclavian region under the clavicle, the locations of these lesions can be explained.

Cystic hygromas are doughy spongy-feeling tumors that are often present at birth. In Gross and Goeringer's[8] cases, 90 per cent were noticed before the child

was two years of age. A few have been reported in adults. They usually occur in the supraclavicular space, where they vary in size from a barely palpable mass to a cyst involving the entire lateral side of the neck. On rare occasions they extend into the mediastinum. Eight of these cases had been reported when Arnheim[2] reported two in 1932. A few occur at the angle of the jaw. Crying or coughing cause them to become more tense and evident. They are usually symptomless but may, through pressure, interfere with deglutition and respiration. They can become infected from the pharynx or through surgical interference. The overlying skin is thin and often has a bluish tint. Unless hemorrhage has occurred within them, they may be transilluminated.

Hygromata are endothelial-lined, usually multilocular, but occasionally monolocular cysts containing a straw-colored or blood-tinged lymphlike fluid. Projections protrude between muscle and fascial planes and surround nerves and blood vessels, making removal difficult and not without danger.

These cysts must be differentiated from hemangiomas, lipomas, dermoids, branchial cysts and abscesses. Usually the diagnosis is not difficult when they lie in the supraclavicular region. The peculiar doughy consistency of the mass is typical. Hemangiomas are usually compressible and cannot be transilluminated. Lipomas and dermoids are entirely different in consistency and also can be ruled out by aspiration. Branchial cysts are more tense and have a definite outline. Their location is typical, and they do not transilluminate. Confusion may arise when the tumor is located at the angle of the jaw, but palpation, transillumination and aspiration should give conclusive evidence.

Treatment consists in radical excision, which may be difficult because of the ramifications of this thin-walled growth. When it extends into the mediastinum, removal is usually impossible and x-ray therapy must be relied upon. Recovery has followed infection. Cures have taken place after aspirations, injections of sclerosing agents, x-ray and radium therapy, but these types of treatment are usually unsuccessful and dangerous. Expectant treatment may allow infection and a critical outcome. These lesions should be approached through a transverse incision following the skin creases, and all of the tumor must be removed. If remnants remain, the cyst will reoccur, frequently in a short time. Dowd[6] reports a recurrence in twenty-five days.

Case Report

On May 24, 1946, a male child, ten months of age, was admitted to the hospital because of a tumor of the neck which the parents had first noticed when the child was two months old.

When the boy was six weeks old, the parents noted a tendency of the baby to hold his head towards the left. Some two weeks later they noticed a lump on the right side of the neck and consulted Dr. Platou. The cyst was aspirated and about 5 centimeters of blood-tinged fluid removed. Operation was advised. On December 28, the baby was brought to the hospital but developed an upper respiratory infection and operation was deferred. At this time, an x-ray was taken of the neck. There was no apparent enlargement of the mass from the time it was first noted. However, the parents thought it was more evident at times.

The baby had been born by cesarean section because of toxemia in the mother, had been breast fed, development had been normal, and the child had been healthy except for the upper respiratory infection in December. The father has a congenital clubfoot.

On physical examination, this male child proved normal except for a growth in the left supraclavicular space. The overlying skin was thin and had a bluish tint. Transillumination was not possible. The cyst had a peculiar soft doughy feel and was difficult to outline. When the baby cried, the mass bulged and became more noticeable.

The x-ray report read as follows: "a soft tissue swelling of the right side of the neck extending from approximately the level of the second to the fifth cervical vertebra."

A diagnosis of hygroma or hemangioma was made and operation was performed on May 25, 1946. Through a 5-centimeter incision, the cyst was dissected free of its many attachments and removed. It projected between muscle and fascial planes, was attached to the jugular vein and in intimate relationship with the brachial plexus. The wound was closed with one drain. The baby made an uneventful recovery, and there has been no recurrence.

The cyst was multilocular, very thin-walled and contained a rusty or blood-tinged fluid. The pathological report read as follows: "A section reveals lymph, adipose tissue, nerve fibers, and muscle surrounding a large cystic space lined with endothelium. Diagnosis: Lymphangioma of the neck."

Hemangiomas

Deep hemangiomas of the neck are not common. They are soft cystic tumors which often can be evacuated on pressure. Their usual location is near the clavicle in the supraclavicular fossa.

Case Report

On August 13, 1945, a baby girl, eight months of age, was seen in consultation with Dr. Trueman. This baby had a soft fluctuant tumor of the neck just above the sternal notch, which had been noticed for two months. On August 5, the cyst had been aspirated of a bloody fluid, lipiodol injected, x-rays taken, and a cyst diagnosed. Operation was thought indicated.

A collar incision was made and a 2-centimeter cyst removed from the region of the sternal notch along with four smaller dilated vessel segments with little or no connection with the vascular system. These tumors were below the fascia in the mid-line, some extending up to the region of the right lobe of the thyroid.

The pathological report was as follows: "Cystlike tumors of the neck. Section shows blood vessels of various sizes, several of which contain free blood, others being empty. Scarring preformed vascular tissue and minimal round cell infiltrate are also noted. Multiple hemangioma."

Summary

The embryology, clinical aspects, and treatment of a number of congenital defects of the neck have been discussed and a case of each type reported. Several conclusions would appear to be evident:

1. A knowledge of embryology is essential in the recognition and treatment of these lesions.
2. Transillumination, aspiration, and x-ray are helpful procedures in their differential diagnosis.
3. Total excisions prevent recurrence.
4. Staining of the fistulous tracts with lipiodal and methylene blue is of value in their safe and adequate removal.

5. Skin incisions should follow natural creases in the neck to give good cosmetic results.

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Discussion

Dr. Martin Nordland: It has been a pleasure to listen to this very interesting discussion of fistulas of the neck by Dr. William Rucker. The occurrence of congenital lesions of the neck is not rare, but in the experience of most surgeons these patients come for treatment rather seldom.

There are a few things relative to the care of the patient with the congenital lesion of the neck that I wish to emphasize. In the first place, because the attending physician does not realize the importance of the radical excision of these lesions the first time the patient is treated, inadequate cure often results. Many times the patient at the original treatment has had a simple incision made in the cyst, resulting in an unhealed fistula. Unusual swelling in the neck in the locations which Dr. Rucker has described should always be considered congenital in origin, and thorough treatment administered the first time. Secondly, it is taken for granted many times that the operative procedure for a cure is a simple one. On the contrary, it can become a very difficult dissection, and preoperative precautions should be taken for a meticulous and difficult job in order to obtain a thorough cure. Attention to the position of the patient on the table is very important. Good exposure is necessary. The position of a patient for a thyroidectomy makes a good position for the surgical treatment of such lesions.

The classical Sistrunk operation for the cure of thyroglossal duct cyst is still the best treatment, as Dr. Rucker has described. One point in the procedure which is worth while emphasizing is that it is always necessary to remove the segment of the hyoid bone as described in the technique. Many of these tracts continue above the hyoid bone to the cecum of the tongue.

Two things are important to mention in the treatment of a branchial cyst. First, the use of lipiodal and methylene blue in small quantity makes it easier to follow the tract in the dissection. The second, and a very important point, is one that Dr. Rucker made with reference to the incision. I think it is a serious mistake to make an oblique incision along the anterior border of the sternomastoid muscle. This always results in an ugly scar. The cosmetic result is very important, particularly in a young woman. Any and all of these lesions can be removed very well through one or more transverse incisions along the natural lines of the neck. I have two very interesting slides which show the value of the introduction of opaque lipiodal with methylene blue. The first slide shows the extent of the lesion. The second slide shows an x-ray picture of the specimen and also that the entire tract was removed.

Dr. Otto W. Yoerg: I was privileged to read Dr. Rucker's paper, and after hearing his presentation tonight, I can now fully appreciate the effort and study that was necessary to make his thesis on congenital cysts of the neck so complete and interesting.

Many of you may not know that Dr. Rucker is an artist. All of the drawings shown on the slides were made by Dr. Rucker.

The contrast media which Dr. Rucker mentioned were first described in a paper on cysts of the urachus which I presented to the Minnesota Academy of Medicine on April 8, 1944. We had injected the sinus of the urachus cyst with lipiodol for x-raying just before surgery. Methylene blue was injected which, to my surprise, when coming in contact with the iodide produced an india black precipitate, which remained fixed in the tract, allowing the dissection of the tract and cyst to be made with ease. I have used this procedure in cysts of the neck, pilonidal sinuses, bowel fistulas, and various other sinuses with gratifying results.

I want to congratulate Dr. Rucker for a splendid paper and feel that the surgical society is privileged to have him as a member.

Dr. A. F. Bratrud: A number of years ago, Dr. Robitshek reported two cases of branchial cysts of the neck which were treated by injecting Carnoys' solution. Several articles appeared in different journals at that time. Dr. Rucker stated that it is rather dangerous to use sclerosing solution in the treatment of any congenital cysts of the neck. I have injected two cases of branchial cysts with very excellent results and without complications.

I would like to know the contraindication for using sclerosing solution in the treatment of these cases. It is not practical to inject thyroglossal cysts with sclerosing solution, as they do not lend themselves to this type of treatment at all, as there may be multiple tracts leading from a thyroglossal cyst.

Previously, when these articles were printed, they gave one contraindication to the use of sclerosing or Carnoys' solution in the treatment of these cysts. They should not be used where the fistula tract extends into the pharynx.

I remember seeing Dr. Gustav Schwyzer operate on a patient with a branchial cyst. He went into the pharynx on two separate occasions and had rather great difficulty in closing. With proper care in the use of Carnoys' solution, I cannot see any objection to this type of treatment when you consider the difficult surgery of branchial cysts. I would also like to ask Dr. Rucker what the incidence of malignancy is in branchial cysts.

Dr. William H. Rucker: I wish to thank Doctors Nordland, Bratrud, and Yoerg for their kind remarks. Dr. Bratrud, I have had no experience with injecting sclerosing solution into branchial cysts, but I do not believe it is a good procedure. Reports in the literature are not favorable. As to the other question, malignancy, I believe, occurs in less than 1 per cent of these lesions.

TREATMENT OF ULCERATIVE COLITIS WITH PROPYLTHIOURACIL

A. B. ROEHLKE, M.D., and GORDON TESCH, M.D.
Elk River, Minnesota

Lawrence Martin[1] of Cambridge, England, in 1946 reported four cases of ulcerative colitis treated with thiouracil in which he obtained clinical benefit in all cases, and improvement in the ulceration of two of these. Later examination revealed improvement in the remaining two. Martin stated that hypothyroidism was not produced, as evidenced by normal basal metabolic rate. He also emphasized the fact that further trials are necessary before any definite claims can be established, though he considered it "justifiable to test any empirical remedy however devoid of logical basis it may appear." He stated that thiouracil is chemically similar to synthetic 5-methyluracil which was used effectively by Spiess et al[2] for the diarrhea of tropical sprue.

An opportunity was presented to try propylthiouracil on one of our cases.

Case Report

A girl, aged twenty-one, was admitted to the St. Barnabas Hospital on July 18, 1947, giving a history of having suffered from ulcerative colitis with numerous exacerbations for the past two years. She had been in the St. Barnabas Hospital on two other occasions, at which time vaccine therapy, dietary regime and chemotherapy had been given with only partial and temporary benefit.

She was markedly malnourished. She weighed 76 pounds. The hemoglobin was 70 per cent. Her serum albumin was 3.6 mg. per cent; serum globulin, 1.0 mg. per cent. The stool was packed with pus cells, and occult blood, four plus, was found. X-ray examination revealed extensive ulceration involving the entire colon. Sigmoidoscopic examination revealed ulceration starting at the dentate line and extending upward as far as could be seen. The mucosa bled freely.

Medical management was instituted without significant benefit. The temperature was septic in character, spiking from day to day from 100° F. to 104.2° F. Penicillin, streptomycin and dietary treatment were instituted without much benefit.

Dr. Carl O. Rice was called in consultation with the idea of preparing her for vagotomy, somewhat in accordance with the plan discussed by Dr. Dennis this evening. Parenteral feeding of glucose, amigen and alcohol were added to her oral feedings, so that her total caloric intake was maintained between 3,000 and 5,000 calories without forcing the oral feedings. The septic type of temperature reaction subsided during this period of treatment. No weight gain was observed, and it was therefore decided to resume dietary regime by mouth. The septic type of temperature reaction returned when the parenteral feedings were stopped, perhaps coincidentally, and within four or five days the patient asked to be discharged. She then weighed 75 pounds. She was discharged. Fifty-two days of hospital management had accomplished no significant benefit. Six to ten small bloody, foul-smelling stool evacuations persisted.

This situation prevailed at home for several days until 50 mg. of propylthiouracil was administered four times daily the first week, then three times a day. Almost immediately her diarrhea improved, stools became formed, and within a few days they were limited to one or two stools per day. In the first seven days she had gained 5 pounds in weight, and at the end of fourteen days she had gained 10 pounds.

Colon roentgenograms taken in November, 1947, still revealed the same findings as formerly reported, and proctoscopic examination on December 2, 1947, indicated definite improvement: a grey granular appearance, but no blood. There was some purulent exudate. The basal metabolic rate on November 11, 1947, was found to be plus 9. The menses was absent for seven months, until last week when she again had a normal menstruation.

She continued to remain clinically relieved. She now feels well, has gained interest in life, and though slightly lethargic, weighs 101 pounds. She has been receiving propylthiouracil for ninety days with no exacerbation of symptoms.

An explanation for the cause of improvement in this case cannot be given. We merely wish to say that a disease as destructive to life and health and unamenable to treatment as ulcerative colitis deserves the benefit of any empirical remedy no matter how void of rationality it may appear.

We have been happy to have the opportunity to present this brief case report to the Minneapolis Surgical society in hope that some of you may find occasion to try it before venturing into irreversible surgical substitution for the alleviation of the distressing symptoms of ulcerative colitis. We have been repeatedly advised by one of your members that a good surgeon is one who knows when not to operate.

Addendum

April 6, 1948—The patient continues to remain free of symptoms. This is the longest remission the patient has experienced since the onset of her first symptoms in July, 1945.

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Discussion

Dr. Clarence Dennis: Sometimes the patients are smarter than the doctor, and this is one of those times. I was among the physicians who were outsmarted by the patient. I didn't see her, but Dr. Rice was concerned about her care. Dr. Rice asked my opinion about it and gave me her story. I said I thought she would respond well to vagotomy. We have been familiar with the work of Martin and had given thiouracil to many of our patients. We have a couple in which we are defeated as far as operation is concerned. They will have a trial on propylthiouracil.

Dr. Leo Culligan: May I know the effect of thiouracil on the normal thyroid?

Dr. Martin Nordland: I have never tried it on the normal thyroid.

Dr. Clarence Dennis: I think myxedema can be produced with thiouracil.

Dr. Martin Nordland: Of that I am sure. I recently operated upon a patient who had had considerable thiouracil previous to a thyroidectomy. She was one of the patients who revealed the danger of this drug. When I first saw her, she had a temperature of 103°, marked cervical adenitis, agranulocytosis, and leukopenia. After recovery from these severe symptoms, a thyroidectomy was done. She was under the care of an internist preoperatively and postoperatively. Since operation she has developed a marked myxedema. Preoperatively she had a marked hyperthyroidism. I cannot believe that the operation alone could have accounted for this severe myxedema.

Minnesota Academy of Medicine

Meeting of December 10, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, December 10, 1947. Dinner was served at 7:00 p.m., and the meeting was called to order at 8:00 p.m. by the president, D. E. M. Hammes.

There were fifty members and three guests present.

Minutes of the November meeting were read and approved.

Drs. Goltz, Kenefick and Drake were appointed on a committee to draw up a memorial to Dr. A. R. Hall.

The following were elected as officers for 1948:

President.....Dr. T. A. Peppard, Minneapolis
Vice President.....Dr. J. A. Lepak, Saint Paul
Secretary-Treasurer..Dr. A. E. Cardle (re-elected)

The scientific program followed. Dr. R. T. La Vake, Minneapolis, presented a paper, after which Dr. Jerome Hilger, Saint Paul, read his inaugural thesis.

SEROLOGIC OBSERVATIONS IN THE TOXEMIAS OF PREGNANCY

R. T. LA VAKE, M.D.
Minneapolis, Minnesota

(Dr. La Vake's paper, followed by a discussion of it, appears on page 372 of this issue.)

AUTONOMIC DYSFUNCTION IN THE INNER EAR

JEROME HILGER, M.D., M.S. (In Otolar.)
Saint Paul, Minnesota

The autonomic nervous system is the mediator in the body's adjustment to its environment. The character of one's autonomic system is a matter of inheritance. There is variation in the quality and performance of the system in different individuals. This fact has been a matter of medical record since very early times. It was given particular impetus by the writings of Eppinger and Hess who in 1909 introduced the clinical pictures of the sympatheticotonic individual and the vagotonic individual into medical literature. It is interesting to follow the emergence of the autonomic system from the anatomic awareness of the nineteenth century to its present position in the forefront of functional clinical medicine. Disease whose pathological basis was then recognized and described only in the textbooks of morbid anatomy is now recognized and intercepted in the stage of early altered physiology—the stage in which autonomic dysfunction has not yet been translated into permanent histologic tissue change. The era of bacterial supremacy in disease concepts appears to be giving way to a realization that intrinsic bodily dysfunction in the neurovascular, neurosecretory and neuromuscular mechanisms may be of more importance in many previously obscure disorders than the presence of bacteria of dubious pathogenicity. The focal disease theory shrinks into relative insignificance as one bodily disorder after another, previously ascribed to it, is demonstrated to result from autonomic dysfunction. The emphasis of recent years on psychosomatic medicine is an expression of general medical awareness of the impact of man's environment on a neural mechanism which may not be equal to a smooth performance of its task.

The inner ear is a structure well-designed anatomically to give gross symptomatic expression to very minor alterations in its neurovascular and, perhaps, neurosecretory mechanisms. Few end organs in the body are as expressive of minute changes in autonomic control. It is a rigidly closed space. Circulation is supplied by an end artery and its branches. Collateral circulation is absent. The neural mechanisms dependent on this arterial supply are minute and delicate. Extremely fine vascular change results in relatively severe subjective sensory disturbance. These may be of an acoustic nature, a static nature, or both, dependent upon the arterial branch involved. The main artery is the internal auditory, a branch of the basilar. Its ramifications supply all parts of the labyrinth. A noteworthy branch, the vestibulocochlear artery, carries blood to the basal turn of the cochlea and to a portion of the saccule, utricle and posterior ampulla of the vestibule. Involvements of cochlear branches give tinnitus and produce hearing impairment when long continued. Vestibular branch changes alter one's sense of position in space. Dependent upon the degree of vascular change, this alteration may be minor, resulting in purely subjective symptoms or of more severe degree and manifested by the objective signs of nystagmus, falling, and past pointing. The subjective sensation of minor vestibular involvement need not be that of violent pulsion or of rotatory movement. When it is neither of these, its evaluation may be difficult, because it is purely subjective. It may, however, be evidence of the earliest functional vascular change in the vestibule. When the vestibulo-cochlear artery is affected, high tone tinnitus and vestibular imbalance are combined symptomatically. Major involvement of the internal auditory artery gives extraordinary subjective tinnitus in all frequencies and completely disrupts the patient's orientation in space.

The changes in neurovascular tonus in the inner ear may be precipitate and extreme or they may be of minor degree and long continued. The cataclysmic disorder of major vascular involvment was organized into a syn-

drome by the writings of Ménière. The chronic progressive degeneration of long continued minor neurovascular change has been obscured as catarrhal deafness or primary eighth nerve neuritis, for several medical generations. The altered physiology producing both pictures differs not in character but in degree. The autonomic nerve distribution which controls them has received little medical thought, though the clinical picture which results has filled medical volumes.

The autonomic nervous system is a motor mechanism comprised in reality of two opposed systems which maintain the equilibrium of the organism's adjustment to its environment—the one is the sympathetic system, the other the parasympathetic. Sympathetic innervation of the labyrinth arises from the thoracic cord and extends cephalad in the cervical sympathetic trunk and its continuation, the internal carotid nerve. The inferior carotico-tympanic branch of the latter traverses the bony septum between the carotid canal and middle ear. It is here joined by a branch of the ninth cranial nerve and the ramifications of the two on the promontory of the middle ear are termed the tympanic plexus. The tympano-sympathectomy of Lempert for intractable tinnitus is based on the destruction of this plexus through an external auditory canal approach which is accomplished by temporarily displacing the tympanic membrane. This sympathetic ablation may not be complete, however, and thus may miss its clinical goal due to possible additional sympathetic innervation of the inner ear through carotid plexus fibers which do not traverse the middle ear but reach the seventh nerve through other anastomosis, as of the deep petrosal nerve with the great superficial petrosal.

The tympanic nerve which emerges from the tympanic plexus traverses the middle fossa surface of the petrous portion of the temporal bone as the lesser superficial petrosal nerve. By connections of the latter with the geniculate ganglion, as well as by direct connecting fibers from the tympanic plexus to the geniculate ganglion and seventh nerve, sympathetic fibers from the cervical trunk and possible parasympathetic fibers from the ninth cranial nerve reach the seventh. The eighth nerve, or cochleo-vestibular nerve, carries no autonomic nerve, fibers from the brain stem. Yet, as shown by Lorente de No, this nerve does have such fibers when it ramifies to the cochlear and vestibular end organs in the fundus of the internal auditory canal. The connecting nerve filament which carries these autonomic fibers from the seventh to the eighth cranial nerve in their course in the internal auditory canal was demonstrated by de No in 1925. It completes the anatomic basis for the neurovascular syndrome of the inner ear.

There is little known about the effect of increased parasympathetic tonus in the inner ear. It is possible that it controls neurovascular phenomena through vasodilator activity and produces common clinical pictures. The usual experimental study has been done not by stimulation of the parasympathetic as a dynamic vasodilating force, but rather by destruction of the sympathetic innervation to produce that effect passively. Direct sympethetic stimulation has been carried out repeatedly. A mass of experimental work has followed three general lines:

1. Cervical sympathectomy and stimulation of the sympathetic at the cervical trunk or below.

2. The effects of drugs acting on the sympathetic system.

3. The results of operations on man with and without ear disease.

Fraser has summarized the work:

"The results are somewhat conflicting but the conclusion which emerges is as follows: constriction of the labyrinthine vessels leads to an increase in the excitability of the vestibule. Dilatation of these vessels leads to a diminution in the excitability of the vestibule with an increase in the acuity of hearing."

An additional physiologic effect in the inner ear is possible through autonomic stimulation. Increased neurosecretory activity through parasympathetic stimulation is possible. Shambaugh, Sr., in his work on the inner ear demonstrated to his own satisfaction that true secretory activity exists in the external sulcus cells of the cochlear duct. By correlation with other secretory mechanisms of the body, this activity should imply parasympathetic innervation. However, the onset of tinnitus or vertigo is sometimes so sudden and violent that it is hard to visualize it as based on sudden increase in neurosecretory activity alone.

Thus there is abundant experimental and clinical evidence that neurovascular changes in the inner ear occur through disturbance of the autonomic innervation. And there are some evidences that neurosecretory mechanisms exist which, in some instances, can contribute to the change in the inner ear. The clinical results in complaints of tinnitus, hearing impairment and vertigo, may be large for the degree of change involved because the inner ear is a rigidly closed space, and the contained neural elements are of extreme sensitivity.

One inherits his autonomic nervous system. If it be an unstable one, the potentiality toward certain clinical disorders is great. The impact of the environment results in manifestations of autonomic imbalance in many body systems. The mechanism is sometimes set in motion by single, specific effectors, such as foods, or inhalant substances, and the body system involved becomes established as a shock organ which thereafter may react to those substances independent of central neural controls. The clinical picture of allergy results. Often, and particularly in a vigorous climate, physical factors of temperature and humidity and their rapid alteration will produce striking autonomic effects. The result has been spoken of as physical allergy and sometimes as intrinsic allergy. There remains yet another effector, and more important perhaps than extrinsic food, inhalant or physical factors, which can produce marked clinical disorder through autonomic disturbance. That effector is the individual's own emotion. This factor brings confusion to the ordinary concepts of allergy. It is the effector in a high percentage of the intractable, or fixed, allergic reactions.

Autonomic dysfunction in the inner ear comes under the influence of these effectors. These factors operate particularly effectively upon a familially unstable autonomic system. In the same individual, one or all may be capable of producing the clinical syndrome of the inner ear. Foods and inhalants are of least importance. The inner ear is not commonly their shock organ. The individual who develops tinnitus, vertigo and hearing impairment from a specific food or inhalant is uncommon enough to be worthy of remark. Physical factors have more significance. Tinnitus is more commonly noted during periods of inclement weather and changes of season. Vestibular vertigo, with or without cochlear symptoms, is more frequently seen during the same periods. These, however, are observations that are difficult to demonstrate statistically because the individual who is truly physically sensitive is usually also most subject to emotional effects through the same autonomic mechanism, and emotional stress knows no season.

Williams deserves great credit for organizing the many autonomic imbalances of the head into the picture of intrinsic allergy of the head. One patient may manifest neurovascular and neurosecretory changes in many systems. In the head, Williams has grouped these into myalgias, vasodilating pains, chronic vasomotor rhinitis and endolymphatic hydrops. In his experience, 23 per cent of patients with endolymphatic hydrops had associated symptoms in the other fields. This is a conservative figure. In our experience it has been nearer 75 per cent when we include the patient with early symptoms of vasomotor labyrinthitis, as well as the patient in the advanced stage.

The terminology of the inner ear syndrome is confusing. It has run the gamut from Ménière's disease to endolymphatic hydrops. In order that all degrees of autonomic dysfunction in the inner ear be given a common etiologic diagnostic term, it would seem preferable to denote the disturbance as vasomotor labyrinthitis where all components of the inner ear are involved, and vasomotor cochleariti s or vasomotor vestibulitis where only acoustic or only static components have yet been involved. Gross disorder involves vestibule and cochlea and results in a syndrome pathognomonic of inner ear disease. It includes violent tinnitus and hearing impairment, severe vertigo, nausea and vomiting. Careful history demonstrates that in over 80 per cent of patients a premonitory phase precedes the first violent inner ear attack. This phase may last for years and be characterized only by intermittent tinnitis, with or without gradually developing hearing impairment, or by mild, transient vertigo, elicited only by abrupt positional change. These symptoms are evidences of poor autonomic adjustments in the neurovascular control of the inner ear. At this stage of the disorder the majority of patients will evidence other symptoms of cranial autonomic instability in the form of myalgia, vasodilating pain, or chronic vasomotor rhinitis, or in a positive family history of similar parental or sibling involvement. In fact, the associated vasomotor rhinitis and pain phenomena have been so commonly noted in association with these ear symptoms in past decades, that the misnomer of catarrhal deafness became descriptive of the chronic progressive cochlear degeneration which resulted. The misept practice of auditory tubal inflation became a standard otologic procedure. It is embarrassing to reflect today on the hundreds of thousands of middle ear inflations which have been doggedly indulged in, in an effort to relieve by aerodynamics a disorder which in reality results from nerovascular disturbance in the inner ear.

Most patients with inner ear symptoms from faulty autonomic balance never manifest the complete syndrome of inner ear disruption. All are potential candidates, however. The first appearance of tinnitus or of vertigo on quick alteration of position in a patient with associated evidence of autonomic imbalance, or a pronounced family history of same, marks the individual in the astute clinician's mind. It is interesting to follow the vasomotor vagaries of one such individual for several years and see the first complete inner ear syndrome appear suddenly and cataclysmically after a particularly severe environmental stress. For every individual who progresses to this point there are scores who continue for years with lesser involvments. When the latter concern vestibular arterial branches only, the pseudo-Ménière's syndrome of Dandy or vasomotor vestibulitis is noted in varying degrees of severity. When cochlear arterial segments alone are involved, the vasomotor cochleariti s results in intermittent or constant tinnitus and progressive and permanent inner ear type hearing impairment. If the vestibulo-cochlear artery from the internal auditory is affected, it is reasonable to expect tinnitus of high pitch, high tone impairment and variable vertigo.

The pathological change in the inner ear which results from vascular alteration could conceivably take two forms; that resulting from frequent minor changes in vessel lumen, and that resulting from sudden major alteration in circulation. These may differ not at all in mechanism of production but only in degree of involvement. Relative to the former, the observations of Guild on the pathology of chronic progressive inner ear deafness are of moment. He states:

> "Normal-looking blood vessels are present in our sections in regions with total atrophy of the organ of Corti. The fact that the areas of end-organ atrophy are often very sharply circumscribed suggests occlusion of terminal arteries as the cause; we have no histological evidence, however, to support this view. The clinical and pathological evidences of systemic vascular disease, as recorded in our tables, also indicate that arteriosclerosis or arteriolosclerosis is not the cause of organ of Corti atrophy."

It is probable that recurrent and transient alterations in vessel lumen produce the permanent neural damage without histologically demonstrable vessel change.

At the other end of the scale of neurovascular change, the pathology of the complete inner ear syndrome with violent clinical manifestations in acoustic and static spheres was shown first by Hallpike and Cairns and since corroborated by Lindsay and many others. They

have shown a gross dilatation of the endolymphatic system with destruction of the neural elements. It can only have resulted from transudation and edema originating probably from the stria vascularis or from hypersecretion, perhaps from the external sulcus cells of Shambaugh.

By what mechanism of the autonomic innervation are these vascular and possibly secretory effects produced? Is it by dynamic activity of the sympathetic segment with the production of vasospasm? Or is it by rigorous overactivity of the parasympathetic with forceful vasodilation and active secretory stimulation? Williams, two years ago, called attention to the work of Otfried Muller in Switzerland who, "described an inherited tendency for capillary loops to behave in an abnormal manner on exposure of the organism to physical and emotional stimuli." Vasospasm impedes the flow of blood through the capillary loops, and endothelial damage with transudation and edema results. This vasospasm may be an expression of sympathetic overactivity. Therapeutic response to vasodilating drugs lends support to their viewpoint. Furthermore, there is no conclusive experimental evidence that parasympathetic vasodilator activity exists in the inner ear.

Modern drug therapy in vasomotor cochleariti, vasomotor vestibulitis and vasomotor labyrinthitis, in either the acute or chronic form, aims at re-establishing the integrity of the inner ear circulation. The forceful vasodilation of intravenous histamine, used in constant drip or intermittent daily injection, is probably most purposeful in the acute stage of severe vascular involvement. In the past year we have alternated its use with that of intravenous tetraethylammonium chloride. The transient autonomic block at ganglion level produced by this drug can terminate an acute, severe vasomotor labyrinthine attack. Its use has gone far to clarify our thinking on the influence of the autonomic system in producing severe vasodilating pains about the head, as well as its role in the violent episodes of the inner ear. We are still broadening our experience with it and here offer its use as therapeutic evidence of autonomic influence in vasomtor labyrinthitis. We believe it will have a place in accepted therapy. Nicotinic acid is also used for its vasodilating influence. When used in frequently repeated doses over long periods of time, it affords the most useful long-term control measure available today. The local neural block effected by the misnamed antihistamine drugs can in an occasional case correct the vasomotor dysfunction when used symptomtatically.

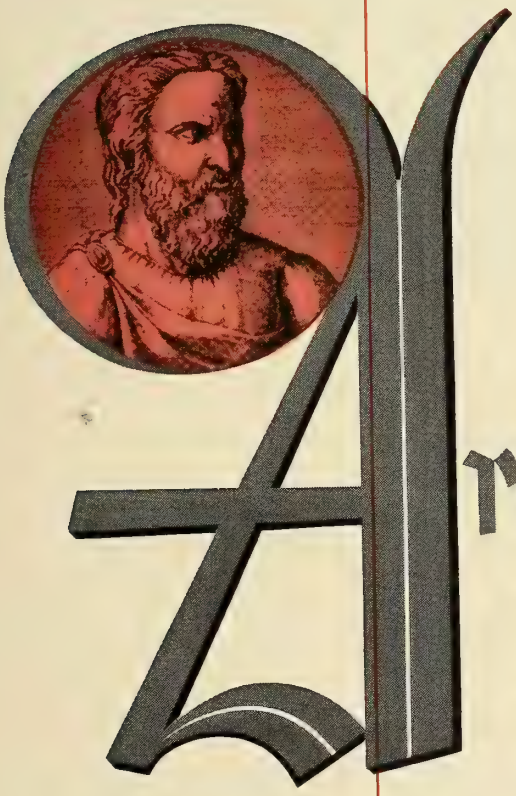
The commonest error in therapy is the tendency to guide it by the response of the patient's vertigo. Horton first accented the patient's hearing as the best indicator of adequate treatment, particularly in the acute vasomotor disturbances. Treatment must be continued until maximum cochlear return has been effected. The patient may have no further vertigo long before this stage. The cochlea is a more delicate mechanism than the vestibule. Oft-repeated vascular damage is cumulative and irreversible in it. It must be reversed shortly after the onset of symptoms by vigorous therapy, or an additional increment of hearing loss will be permanent. The audiometer is essential as a gauge of acuity. Voice tests are inadequate. They are neither accurate nor do they test the high frequencies usually most severely involved.

Some systemic factors have been noted repeatedly to have an influence on the production of inner ear symptoms through autonomic mediation. In the treatment of the disorder they should be given proper attention as contributors only. Endocrine factors in women which influence vasomotor control during the menopause, or at the time of the menstrual period, accent vertigo and tinnitus in the autonomic unstable individual during those periods. The low metabolic rate commonly found in both males and females with autonomic instability need not be a cause of their inner ear symptoms but rather another result of faulty autonomic regulation. The use of thyroid, therefore, should not be viewed as a complete method of treatment but as an adjunct only. The influence of fatigue and tobacco in the production of vasospasm makes adequate rest and abstinence from smoking one of the first rules of proper therapy.

Drug therapy has distinct limitations in a disorder in which emotional factors play a major etiologic role. The patient with early and still tractable vasomotor irregularity in his labryinth often needs correction in his attitude toward life. Drug therapy serves best in the acute severe phase of vasomotor change. Psychotherapy is frequently more important in maintaining stability once regained.

The patient with far advanced vasomotor labyrinthitis usually has permanent loss of useful hearing in the involved side with a vestibular mechanism still sufficiently viable to repeatedly disable him with attacks of vertigo. Often his abnormal neurovascular habit is so deeply rooted that it responds poorly, if at all, to medical and psychiatric correction. The number of advanced cases comprises an extremely small percentage of the total with vasomotor labryinthine disease. With early recognition and proper medical and psychiatric treatment, this small percentage will dwindle further. Surgical destruction of the involved labryinth is the only control measure one can at present offer the intractable case. Dandy accomplished this with differential intracranial section of the eighth nerve. Today, that quite formidable procedure is utilized only for cases with disabling and uncontrollable vertigo who have retained good cochlear function, or in cases with bilateral vestibular involvement. These are uncommon. The labryinthotomy procedure of Day has largely replaced intracranial section. It is accomplished through a mastoid approach to the lateral semi-circular canal and is a procedure with little morbidity. It now appears that a technique elaborated by Lempert may even be preferable to that of Day. It is effected through the external auditory canal. The drum head is temporarily displaced so as to expose the medial wall of the middle ear; the incus is sectioned, thus freeing the stapes from the ossicular chain; the stapes and oval window membrane are then removed and the round window membrane perforated; the drum head is replaced. Morbidity is minimal, and postoperative vertigo is dependent only on the

(Continued on Page 424)



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(Continued from Page 422)

amount of vestibular activity present preoperatively, as evidenced by the caloric test.

With either the Day or Lempert procedures, residual hearing is lost on the involved side. For that reason, this operation is reserved for disabled and uncontrollable cases with no useful hearing remaining on the involved side. The possibility of opposite side involvement in so general a disorder as vasomotor instability exists. The sacrifice of useful hearing could be disastrous if, in the future, vasomotor cochlearitis developed in the opposite ear.

The use of streptomycin by intramuscular injection to destroy the vestibular end organ by selective neurotoxic action is receiving wide attention. It is possible that its usage should be limited until its neurotoxicity is conclusively shown to exist for the vestibular end organ alone. An infrequent case of vasomotor vestibulitis may suffer severe and disabling vertigo, yet show no cochlear component to help in lateralizing the disorder. Here, differential section of the eighth nerve is not applicable because the side producing vertigo may not be definitely determinable. Labyrinthotomy is not applicable because useful hearing would be destroyed. Streptomycin destruction of both vestibules would seem reasonable in such an instance.

Summary

The syndrome of the inner ear results from neurovascular, and possibly neurosecretory, change in the labryinth.

This change may be acute and severe, as the result of sudden alteration in the vascular tonus of large segments of the neural mechanisms of the inner ear, and produce the picture of severe acute vasomotor labyrinthitis, vasomotor cochlearitis, or vasomotor vestibulitis; or it may be chronic and insidious, as the result of long continued and intermittent alterations in the vascular tonus of many small segments of the neural mechanism of the inner ear, and result in chronic vasomotor labyrinthitis, vasomotor cochlearitis, or vasomotor vestibulitis.

These changes are mediated by autonomic mechanisms which differ not in kind but in degree.

They occur most frequently in individuals with inherited autonomic instability.

The majority of these individuals manifest evidences of autonomic dysfunction in other body systems.

Extrinsic physical factors and intrinsic emotional stress are the commonest precipitors of autonomic dysfunction in the labryinth.

Proper medical and psychiatric treatment can relieve and control many of the vasomotor disorders of the inner ear.

A small percentage require surgical destruction of labryinthine components because of intractable autonomic dysfunction.

Discussion

DR. L. R. BOIES, Minneapolis: It has been suggested that the first paper on this evening's program might be a bit over our heads. The same thought occurs to me in regard to Dr. Hilger's thesis. Nevertheless, his thinking is probably in the vanguard of thought which will explain some things which have not been satisfactorily explained by our clinical experience to date.

Dr. Hilger remarked that "the focal disease theory shrinks into relative insignificance as one bodily disorder after another, previously ascribed to it, is demonstrated to result from autonomic dysfunction." Probably no area in the body has been searched more diligently for a source of infection to impair bodily function than has the field of activity of the otolaryngologist. And it is a fact that the activities of modern rhinologists have decreased at least 50 per cent in the matter of focal disease.

Another activity which has undergone a change in our specialty has been the correction of supposed nasal pathologic conditions to cure chronic headache. It is now known that in most victims of a headache which is a chronic problem, "sinus disease" or other nasal pathology is not the common cause, but the headache is often related to some autonomic dysfunction which alters normal vascular physiology.

I have been stimulated by Dr. Hilger's presentation, and I thank him for it.

DR. C. E. CONNOR, Saint Paul: I have no comment on the technical content of the paper; it covers the field very adequately. There is one thing I would like to say, however. Dr. Hilger said that in the past there have been many aspects of otology which have appeared hopeless and in which we have had nothing to offer in the way of treatment; many patients have observed, "When are you otologists ever going to make any progress in your field?"

I think some progress has been made in the last decade or two. New knowledge in physiology, in biochemistry, in acoustics and electronics, is being brought to bear on many obscure conditions. There are new techniques in the approach to otological problems; Crowe, at Hopkins, and others have done much work in which antemortem studies of cochlear function are correlated with postmortem pathological examinations. The combination of new knowledge in other fields and new methods of study in otology are beginning to yield tangible results.

DR. HILGER, in closing: I want to thank Dr. Boies and Dr. Connor. Certainly the basis of our advances in the last ten years is physiology. Many of the things that one feels will be definitely demonstrated in the next few years as fact are now in the formative stage of part fact and part theory. In treatment, I think more emphasis must be placed on psychotherapy than has been the trend in the past. Our Fellows in otolaryngology at the University cannot fully appreciate it now, but the changes in our field have been very great in the past ten years. We have become much less mechanical minded and much more physiologic.

The meeting adjourned.

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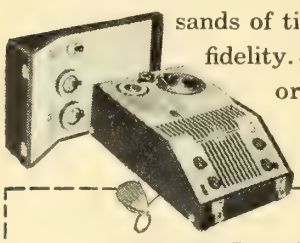
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Communication

To The Editor:

A letter written by Dr. Kano Ikeda appeared in the January, 1948, issue of MINNESOTA MEDICINE stating the objections of the clinical pathologists to a resolution unanimously passed by the House of Delegates of the Minnesota Medical Association in July 1947, petitioning the Minnesota State Board of Health to include routine RH typing in its laboratory service. As the one who presented this matter to the Minnesota Society of Obstetrics and Gynecology at its meeting during May 1947 in Duluth, at which time a resolution was unanimously approved requesting the House of Delegates of the Minnesota Medical Association to petition the Minnesota Board of Health to include the above services in its laboratory, I would like to present a different point of view.

With the introduction of the RH and AB factors as a cause of erythroblastosis a problem comparable to the Wassermann problem of some decades ago has been created. Then as now with blood typing, private facilities for doing Wassermann tests were well established and available, but unfortunately were not generally utilized as a routine, especially during pregnancy. Syphilis being a communicable disease there is no longer any question that its recognition through Wassermann testing is a public health function. Although RH and ABO factors are in a different category, disasters due to the omission of blood typing may well be considered public health problems. Among these, erythroblastosis especially engages the attention of the pediatrician and obstetrician. It is now well established that the RH negative mother of an erythroblastotic baby with the RH positive homozygous husband will continue to have erythroblastotic babies. The same is true with the A and B factors but the incidence is much less frequent. Consequently, although the latter may be involved in similar situations, this discussion will be limited to the problems involving the RH factor. At the present time the most hopeful manner in which the presumptive erythroblastotic baby can be treated as through the possible early induction of labor followed by an exchange transfusion of the infant with RH negative blood. This in turn necessitates definite knowledge of the RH status of a woman early in pregnancy. Because RH typing in the pregnant woman in spite of the existing facilities is now for the most part being omitted it would seem desirable for the State Board of Health to take over and exploit the procedure at least in this group. The same specimen of blood drawn for the Wassermann test could easily be used for RH blood typing.

At the moment this would appear to be of some disadvantage to the clinical pathologist, but will it not eventually result in more work for him? First, because once it has been established that the pregnant woman is

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RH negative it is incumbent upon the attending physician to ascertain not only the RH status, but the heterozygocity and the homozygocity of the husband. Secondly, when it has been settled that a pregnant woman is RH negative and the husband is RH positive, it then becomes the duty of the attending physician to determine whether or not iso-immunization is developing in the prospective mother. Such determinations could not be handled in the laboratories of the State Board of Health and would necessitate the utilization of the facilities of the various clinical pathologists. It is not the aim of the leaders in this movement to have the State Board of Health establish a complete hematological laboratory. Only routine RH and ABO typing would be done, because the equipment necessary for the determination and titration of RH and AB iso-immunization is quite beyond the budget limits of the Board of Health.

Generally the public is not inclined to pay for what it regards as unnecessary services. Rather an attitude prevails of, "It can't happen to me." However, once the seriousness of a given medical situation is revealed, cost means little.

Potentually, every RH negative woman with the RH positive husband is confronted with a serious situation if she becomes pregnant. Even though in the minority, with those who are destined to have an erythroblastotic baby due to RH sensitization, the only hope for even one surviving child may be in the early recognition and the subsequent titration course of the iso-immunization. Erythroblastosis is more lethal than congenital syphilis and much less amenable to treatment. Public attitudes then being what they are, it would seem not only desirable but logical for the State Board of Health to undertake the routine typing for the RH factor.

No physician would wish to establish an agency detrimental to any member of the medical profession. If routine RH and ABO typing by the Minnesota State Board of Health would seriously handicap the clinical pathologists it would be one thing, but if its exploitation potentially adds to his benefits it is quite another. Controversy as to the principle involved becomes trivial. Even if this were untrue Medicine must maintain that human problems transcend limited interests of the individual.

In conclusion, routine RH typing by the State Board of Health in Minnesota would be no innovation. As of January 1947, the Boards of Health in seven states, Massachusetts, Vermont, Georgia, South Dakota, Nebraska, Florida, and Connecticut do routine RH typing. In eleven states, California, New York, New Jersey, Wyoming, Michigan, Idaho, South Carolina, Ohio, Rhode Island, Kentucky and Wisconsin RH typing is done by the Boards of Health on request. In three of the above named states determinations and titrations of iso-immunizations are a function of the Health Boards Laboratories.

May I urge the Council of the Minnesota Medical Association to act immediately on the petition of its House of Delegates.

Yours truly,
C. J. EHRENBERG, M.D.

March 11, 1948.

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OPHTHALMOLOGY—Intensive Course, two weeks, starting May 10.
Ocular Fundus Diseases, one week, starting June 7.
GYNECOLOGY—Intensive Course, two weeks, starting April 26, June 7.
Vaginal Approach to Pelvic Surgery, one week, starting April 19, June 21.
OBSTETRICS—Intensive Course, two weeks, starting April 12, June 21.
MEDICINE—Intensive Course, two weeks, starting April 26.
Personal Course in Gastroscopy, two weeks, starting June 28, July 12.
Electrocardiography & Heart Disease, four weeks, starting May 3.
Hematology, one week, starting May 10.
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In Memoriam

CHRISTIAN FREDERICK CARSTENS

Dr. C. F. Carstens, a practitioner at Hibbing, Minnesota, since 1914, died on February 19, 1948. He was sixty-eight years old and had been disabled since November, 1942.

He was born in Ackley, Iowa, October 7, 1879. He attended Lake Forest Academy and Lake Forest College at Lake Forest, Illinois. After graduating from college he taught school in the Philippines for three years. In 1904, he returned to this country and studied medicine at Johns Hopkins, where he graduated in 1908.

Dr. Carstens joined the staff of the Rood Hospital in 1910, serving for four years in Keewatin before moving to Hibbing in 1914. During World War I, he served in the medical officers training camp at Fort Riley. In 1941, he helped form the Mesaba Clinic at Hibbing.

He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations. He was also a member of the Mesaba Lodge of Masons, the Chamber of Commerce, the Mesaba Country Club, and the Algonquin Club. He had served as chief of staff of the Hibbing General Hospital and as a director of the Children's Home Society of Saint Paul. He was a member of the Presbyterian church.

Dr. Carstens is survived by his widow, Lucile, and a daughter, Caroline, who is attending Stephens College, at Columbia, Missouri.

THEODORE F. HAMMERMEISTER

Dr. Theodore F. Hammermeister, well known surgeon of New Ulm, died February 14, 1948, of a heart attack.

He was born at Morgan in Eden township, Minnesota, July 25, 1887. He obtained his medical degree from the University of Minnesota in 1914 and interned at Northwestern Hospital, and at the University Hospital, Minneapolis.

In June, 1915, Dr. Hammermeister went to New Ulm, where he associated with the late Dr. O. C. Strickler until 1918, when he opened an office of his own. In 1926, he went into partnership with Dr. C. A. Saffert.

He was a member of the Redwood Brown Medical Society, the Minnesota State and American Medical Associations. He was also a member of the Southern Minnesota Medical Association. Interested in education, he served many years as a member of the New Ulm school board and as president of the board. For ten years, he was health officer of New Ulm.

Dr. Hammermeister married Isobelle M. Dunn on June 8, 1915. Mrs. Hammermeister died in 1933. A son, Robert, now lives in Minneapolis. In 1935, Dr. Hammermeister married Mrs. Pearl Rexford, who survives him.

HAWLEY S. SANFORD

Dr. Hawley S. Sanford, son of Dr. and Mrs. A. H. Sanford of Rochester, died February 24, 1948, in Detroit, Michigan, of acute coronary disease.

He was born in Milwaukee, January 24, 1909. He attended public schools in Rochester and received his M.D. from Harvard Medical School in 1933. Interning at the George F. Geisinger Memorial Hospital in Danville, Pennsylvania, he entered the Mayo Foundation as a fellow in surgery in 1934. Later, he changed his major subject to neurology and received the degree of M. S. in neurology and psychiatry from the University of Minnesota in 1937. At this time, he went to Detroit, where he was neuropsychiatrist on the staff of the Henry Ford Hospital. He served as a major in the Army Air Force in World War II.

Besides his parents, Dr. Sanford is survived by his wife, a son and daughter, and a brother, Dr. Raymond A. Sanford of Rochester.

DE COSTA RHINES

Dr. De Costa Rhines, formerly of Caledonia, died at the home of his daughter, Mrs. Hazel L. Hosfield in Owatonna, Minnesota, on February 9, 1948, at the age of ninety-five.

Dr. Rhines was born January 18, 1853, in Jackson County, Michigan. He graduated from the Hahnemann Medical College at Chicago in 1884 and began practice at River Junction, Michigan. After changing his location to Houston County, Michigan, he moved to Caledonia in 1899. Here he practiced until his retirement several years ago. In 1941, he and Mrs. Rhines moved to Owatonna to make their home with their daughter.

He was a former member of the Houston-Fillmore County Medical Society, the Minnesota State and American Medical Associations. He served for many years as county coroner, a term as president of the village council and on the school board. He was also a past master of the Caledonia Masonic lodge.

Since moving to Owatonna, Mrs. Rhines passed away. Dr. Rhines is survived by one daughter, Mrs. Hosfield, and one son, Ray N. Rhines of Burlington, Washington.

Dr. Rhines' practice of over fifty years extended back to the horse and buggy days and represented years of devotion to his patients and country.

AARON FRANKLIN SCHMITT

Dr. Aaron F. Schmitt, a surgeon of Mankato until his retirement from practice in June, 1921, passed away March 15, 1948, at his home in Minneapolis, at the age of seventy-eight. He suffered a coronary occlusion on June 5, 1925 and a stroke in August, 1925, with resulting hemiplegia.

Dr. Schmitt was born in New Trier, Dakota County, Minnesota, February 12, 1870. He attended high school in Mankato. His M. D. was obtained from Rush Medical College in 1902. He practiced at Wells, Minnesota, from 1901 to 1906 and at Mankato from 1906 to 1921. In 1910



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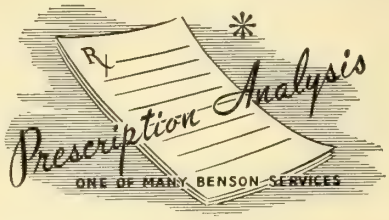
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he took postgraduate work at Berlin, Vienna, London, and Leeds.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. For a number of years, as chairman of the Program Committee of the Southern Minnesota Medical Association, he was the dynamic force which brought the association into prominence. He was a member of the American College of Surgeons and a former member of the Minnesota State Board of Medical Examiners. He was also a member of the Scottish Rite and the Osman Shrine.

Dr. Schmitt is survived by his wife, two daughters—Mrs. E. C. Merrill of Harrah, Washington, and Mrs. Harold Habein of Rochester, two sisters—Mrs. David Kienholz of Stanley, Wisconsin, and Mrs. Frank Bailey of Pittsburgh, and two brothers—George Schmitt of Madison and Dr. Samuel C. Schmitt of San Diego, California.

ROBERT OTTO MEYER

December 12, 1947, marked the passing of one of the great leaders in contemporary Medicine, Dr. Robert Otto Meyer. His death in his eighty-third year occurred in Minneapolis, Minnesota, where he lived after his exile from Germany in 1939. Inasmuch as his biography has been well chronicled, another is superfluous. Dr. Emil Novak of Baltimore presented the first in an address before the sixty-ninth annual meeting of the American Gynecological Society, entitled "The Life and Works of Robert Meyer." This address was published in the *American Journal of Obstetrics and Gynecology* of January, 1947. Secondly, Dr. Meyer's autobiography is currently being published as a serial in the *Journal of the History of Medicine and Allied Sciences,* which is later to be presented in book form.

Dr. Meyer was a cultured European scholar and scientist. He was a true aristocrat through the humble appreciation of his own knowledge and attainments, of which he could not be deprived but which were never flaunted. Born to moderate wealth during a peaceful and prosperous era in German history, he was destined to experience increasing material adversities through World War I, the Hitler regime, and World War II. In spite of all this, he never expressed resentment or indignation. Instead, events in his life were historical incidents that he wove into a systematic pattern in which he was never the victim but always the master. In his own words taken from his autobiography which was written in his last years, "I have had an exceedingly beautiful life which would be worth living once more. I have always had the feeling in difficult situations that things would come out well, and they came out right. I let life approach me, made my decisions and they were right."

One could not be in his presence for long without feeling his consummate kindliness, a quality made more gracious by its simplicity, sincerity and dignity. An authority, he was never the austere master, but rather the sympathetic colleague. No problem was so simple that it could not be followed to its end. On the other



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hand, with more complex problems, well-chosen questions invariably led on to greater clarification or solution. His knowledge was precise, well-defined and usually philosophical. An example of this was his definition of menstruation. "It is a cyclic uterine bleeding, occurring ideally every twenty-eight days, preceded by ovulation, corpus luteum formation and a secretory endometrium." These requisites implied the possibility of pregnancy. Consequently, the term "anovulatory menstruation" of Corner, Hartman, Novak and others, although a cyclic uterine bleeding but from a proliferative endometrium, was conclusively in Dr. Meyer's mind a misnomer, confusing and philosophically incorrect. Menstruation traditionally was related to reproduction and pregnancy, so obviously an anovulatory uterine bleeding, although cyclic, physiologic, and probably normal to the human female at times in her menstrual life must be defined as such. A precise concept was necessary for thinking properly in a scientific realm.

His microscopy is worthy of mention. He would spend from minutes to innumerable hours studying microscopic slides. After this the clinical history would be given, but only after the diagnosis had been made microscopically. If there was no agreement, then the whole was reviewed and reviewed again until a correlation was made. Through methods such as this, his monumental concepts were formed concerning, only to mention a few, the distinguishing characteristics of corpus luteum-endometrial relationships, hydatidiform mole and chorionepithelioma, and the various attributes of ovarian tumors. Many of these concepts are still recognized as his but others, accepted now as fact, no longer carry the connotation of his name. Although he was cognizant of this, he suffered no indignation. Rather, it was another manifestation of his true aristocratic character to know his contribution was an established truth. Whether the world recognized him or not made little difference.

Although the scientific attainments of Dr. Meyer were the factors in making him a world figure, he possessed others which contributed immeasurably to his stature. Unfortunately for him and his colleagues in Germany, he had no interest in politics. This was the function and concern of the politician, and as a man of science he would have none of it. Whether the course of German history would have been shaped differently had men of his proportions embraced politics will forever be an unanswered question. However, during his stay in the United States, he established his citizenry, a privilege in which he took pride.

Dr. Meyer was an expert in the field of philology. The study of Latin and Greek in his early years, especially the former, which he considered the most precise of all languages, provided the background. The precision of his written English was remarkable, although the spoken word was for him never without difficulty. On one occasion he took exception to the improper use of certain English words by an American colleague. During the subsequent controversy his knowledge of word derivation was such as to cause the retreating colleague to admit admiringly that it was expected of him to teach histology and embryology, but not English.

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Dr. Meyer's philosophy extended far beyond the limits of his scientific thinking. Religion, literature, arts and music were to him of vital concern. Although a Jew racially, he was reared in the Lutheran Church. After maturity he confessed no creed, but his moral and religious convictions were profound and compelling.

His interest in and knowledge of literature transcended that of German origin. He was a keen student of Goethe, both from a literary and philosophical standpoint, but he was also thoroughly familiar with Shakespeare and could recite either with almost equal facility.

Quoting from Dr. Meyer's autobiography, "Music played a large role in my home town and in our home." He was privileged to have known Grieg intimately through his brother who played the piano with Grieg publicly. Further, he was familiar with Liszt, Brahms, Joachim, Saint-Saens, Clara Schumann and others, in that he heard and saw them many times. It was fascinating to hear him describe the contemporary and his own reaction to the first production of the works of Richard Wagner. During World War I, he was the organizer and leader of a symphony orchestra in a German base hospital in Brussels, of which he was a staff officer. This orchestra gave periodic concerts for the populace of Brussels. Although he enjoyed music, he maintained it was not high on the scale of human aptitude. Often he pointed out that musical prodigies were common when compared to those in science and mathematics.

Notwithstanding Dr. Meyer's intellectual accomplishments which made him at all times stimulating and instructive, there was more. He was human. The "common touch" was natural to him. He was equally affable as a guest or host. In the presence of women, he was courteous to the point of being gallant. Yet, in the presence of men he was natural even through the most risqué of stories. His wit was spontaneous and quick. Once when asked if food at a particular resort in which he had been a guest was "pretty good," he replied immediately, "Yes! pretty, but not good."

To have known him was a pleasant privilege, but also a prerogative that results in a deep sense of loss with his passing. Although the memory of his person will grow dimmer through the years, the truths which he established and stood for will shine out eternally, not only to us who knew him, but to posterity.

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- Reports and Announcements -

AMERICAN ACADEMY OF PEDIATRICS

The Area Meeting of the American Academy of Pediatrics will be held at the Hotel Schroeder, Milwaukee, Wisconsin, June 28-30, 1948.

Members of State Medical Societies are welcome to attend. The registration fee will be $5.00 for such non-members, together with a $5.00 registration for which each registrant receives a ticket to the banquet, making a total registration fee of $10.00.

Registration may be made ahead of time by writing to Dr. C. G. Grulee, Secretary-Treasurer, American Academy of Pediatrics, 636 Church Street, Evanston, Illinois, enclosing a check for $10.00, or registration may be at the time of the meeting.

AMERICAN COLLEGE OF CHEST PHYSICIANS

The Board of Examiners of the American College of Chest Physicians has announced that the next oral and written examinations for Fellowship will be held at Chicago on June 17. Candidates for Fellowship in the College, who would like to take the examinations, should contact the Executive Secretary, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

The fourteenth annual meeting of the College will be held at the Congress Hotel, Chicago, June 17 to 20. An interesting scientific program has been arranged for the meeting, and speakers from several other countries are scheduled to appear.

AMERICAN COLLEGE OF SURGEONS APPROVES USE OF NURSE ANESTHETISTS

The Board of Regents of the American College of Surgeons, at a meeting on February 22, 1948, adopted the following resolution:

The American College of Surgeons regards with deep concern the actions of some physician anesthesiologists in giving the impression to the laity in the public press that it is unsafe for experienced nurse anesthetists to conduct surgical anesthesia. While it supports the increasing tendency of having physician anesthesiologists in charge of surgical anesthesia, it deplores at this time any propaganda for the elimination of the trained nurse anesthetist. On the contrary, the American College of Surgeons is of the opinion that, in view of the inadequacy in number of the physician anesthesiologists and in view of the splendid record of achievement of the nurse anesthetists, institutions engaged in the training of nurses for this purpose should be encouraged to continue their programs.

AMERICAN HEARING SOCIETY

Beginning April 1, 1948, the American Hearing Society, which has been housed for twenty-five years in the Volta Bureau Building, 1537 35th Street, Northwest, will be occupying quarters at 817 14th Street, Northwest, Washington 5, D. C. Two factors influenced this move: an opportunity to secure a suite of offices (recently released by the government) on the fifth floor, with elevator service, in a downtown location, and a decision by the Board of Trustees of the Volta Bureau to remodel their building. Through telephone and personal contact, co-operation and co-ordination of efforts will continue between the two organizations, the Volta Bureau and the American Hearing Society.

NORTH DAKOTA STATE MEDICAL ASSOCIATION

The annual meeting of the North Dakota State Medical Association will be held at Jamestown, North Dakota, on May 23, 24 and 25. The scientific sessions will be held May 24 and 25. Members of the Minnesota State Medical Association are cordially invited to attend. Reservations may be made through the office of the North Dakota State Medical Association, Box 1198, Bismarck, North Dakota.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

Summer sessions for practicing physicians and medical students in the clinical and preclinical years will be held June 14 to 24 and July 26 to August 28. Courses both in the basic sciences and in clinical subjects will be offered.

The clinical facilities of the University Hospitals, Minneapolis General Hospital, Veterans Hospital and other affiliated hospitals of the medical school will be used, and clinical service will occupy approximately three-fourths of the time of those taking clinical subjects. This is an unusual opportunity for practicing physicians actually to work in these hospitals. Courses which are part of the regular medical curriculum will also be offered in the basic sciences and clinical subjects.

Further information may be obtained from the Dean of the Summer Session, 880 Administration Building, University of Minnesota, Minneapolis 14, Minnesota.

WASHINGTON COUNTY SOCIETY

At the regular meeting of the Washington County Medical Society, held in Stillwater on March 9, the principal speaker was Dr. C. W. Rogers, Minneapolis, who presented an x-ray illustrated lecture entitled "Diagnostic Difficulties in Urology."

During the business section of the meeting, action was taken on Dr. George McCue Ruggles' request for the society's approval of the Blue Cross plan for his hospital at Forest Lake.

Dr. John W. Stuhr, who had been hospitalized for a period following the fracturing of his left patella on January 18, was able to preside at the meeting. He had as his guest, Dr. S. W. Arhelger, who is studying under a fellowship in surgery at the University of Minnesota.

Of General Interest

Dr. Karl E. Johnson, Duluth, spoke on cancer control at a meeting of the West End Business and Civic Club in Duluth on March 16.

* * *

Formerly of the Veterans Hospital at St. Cloud, Dr. Rudolph B. Skogerboe in March opened an office for the general practice of medicine at Karlstad.

* * *

Members of the Blue Earth Valley Medical Society, meeting in Blue Earth on February 26, heard Dr. James W. DuShane of Rochester speak on "Congenital Heart Disease."

* * *

In Montreal, Quebec, at a meeting of the Montreal Neurological Society on March 10, Dr. L. M. Eaton of Rochester presented a talk and a motion picture demonstration on "Myasthenia Gravis."

* * *

At a meeting of the District of Columbia Medical Society, in Washington, D. C., on February 18, Dr. Philip S. Hench, Rochester, presented a paper entitled "Diagnosis and Treatment of Gout."

* * *

Medical aspects of atomic explosions were discussed by Dr. Hilbert Mark, Minneapolis, at a meeting on February 17 of army organized reserve medical units at Fort Snelling.

* * *

"Infections of the Urinary Tract" was the title of a paper presented by Dr. T. L. Pool, Rochester, at a meeting of the Urologic Section of the New York Academy of Medicine on February 18.

* * *

In behalf of the American Legion heart research professorship, Dr. B. C. Ford, Marshall, discussed rheumatic fever on a radio program broadcast over KMHL on February 12.

* * *

While Dr. B. W. Bunker of Anoka was in Florida with his family during part of February and March, his practice was maintained by Dr. Eugene Meyerding of Saint Paul.

* * *

On February 24 it was announced that Dr. Harvey J. Tompkins, formerly of the Veterans Hospital in St. Cloud, had been appointed chief of neuropsychiatry for the Veterans Administration.

* * *

Formerly of Minneapolis, Dr. Frederick M. Hass opened offices in Jordan about March 1 for the practice of medicine. After obtaining his medical degree, Dr. Hass served with the army occupation forces in Japan.

* * *

At a meeting of the American College of Allergists in New York City on March 14, Dr. B. T. Horton, Rochester, presented a paper written in collaboration with Dr. H. P. Wagener, entitled "Retrobulbar Neuritis; Treatment with Histamine."

* * *

Socialized medicine was discussed by Dr. E. M. Hammes, Saint Paul, in a talk on February 18 at a dinner meeting of the Saint Paul Business and Professional Women's Association.

* * *

Dr. John B. Erich, Rochester, at a sectional meeting of the American College of Surgeons in Denver, Colorado, during the first week of March, presented a paper entitled "Management of Traumatic Wounds about the Face."

* * *

Dr. William H. Bickel, Rochester, gave three lectures at the Lois Grunow Memorial Clinic in Phoenix, Arizona, about the middle of February. Subjects of his lectures were "The Differential Diagnosis of Foot Pain," "Backache," and "Treatment of Complications of Fractures."

* * *

"Anastomosis of Trachea with Polythene Tubes; An Experimental Study" was the title of a paper written by Dr. J. H. Grindlay and Dr. O. T. Clagett, Rochester, and presented by Dr. Grindlay at a meeting of the Central Surgical Association on February 19 in Chicago.

* * *

Chest clinics were conducted in Red Wing on February 24 and in Rochester on March 2 by Dr. Karl H. Pfuetze, superintendent of Mineral Springs Sanatorium, who examined ex-patients of the sanatorium and administered Mantoux tests to all persons desiring them.

* * *

Dr. Hilbert Mark, of the division of tuberculosis, Minnesota Department of Health, spoke on "Modern Aspects of Tuberculosis Control" at the forty-fourth annual midwinter council meeting of the Minnesota Federation of Women's Clubs, held in Minneapolis on February 20.

* * *

On the program at the meeting, to discuss the importance of immunization, were Dr. A. V. Stoesser, clinical professor of pediatrics at the University of Minnesota, and Dr. Clare Gates, director of health information of the Minneapolis Department of Health.

* * *

In Osakis it was announced on February 23 that Dr. E. E. Emerson had been named chairman of the local heart fund drive, part of the statewide campaign of the American Legion to establish a heart research professorship at the University of Minnesota.

* * *

At a meeting of the Colorado State Medical Society in Denver during the first week of March, Dr. G. J. Thompson, Rochester, presented two papers on urology.



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They were entitled "Common Office Procedures in Urology" and "Diagnosis and Treatment of Tumors of the Bladder."

* * *

At the February 19 meeting of the Saint Paul Surgical Society, Dr. R. F. Hedin spoke on "Adrenal Tumors," and Dr. Grant Hartnagel was elected to membership in the society. Both physicians are associated with the Interstate Clinic of Red Wing.

* * *

In Shakopee about February 15, Dr. B. F. Pearson and Dr. Roy T. Pearson moved into newly decorated and refinished first-floor offices in the Hickman Building at 116 South Holmes Street. The physicians were formerly located in offices in the Shakopee Theatre Building.

* * *

Near the end of February, Dr. Louis B. Kucera joined his uncle, Dr. S. T. Kucera, in practice in the latter's office in Lonsdale. The younger Dr. Kucera is a graduate of Marquette College, Milwaukee, Wisconsin.

* * *

On February 28, Dr. W. H. Peterson began practice in Owatonna as an assistant to Dr. L. V. Berghs. A graduate of the University of Minnesota Medical School, Dr. Peterson interned at Sacramento County Hospital in California, then served for two years in the navy, from which he was discharged in December, 1947.

Dr. Donald Dukelow, director of the Health and Medical Care Division of the Minneapolis Council of Social Agencies, is sponsored by the University of Minnesota in his health broadcasts each Sunday at 11:15 a.m. over KUOM.

* * *

In St. Peter early in March, Dr. Alfred Sherman ended his partnership with Dr. Carleton S. Strathern and indicated that he might locate in another southern Minnesota city. Dr. Strathern planned to form a partnership with another physician as soon as business and living arrangements could be made.

* * *

In Cannon Falls during the first week of March, Dr. John B. Maunder became associated with Dr. M. R. Williams in the practice of medicine. A graduate of the University of Minnesota Medical School, Dr. Maunder was associated with a clinic at Milaca for a few years before moving to Cannon Falls.

* * *

After practicing for a year at Holdingford, Dr. Glenn Schmitz became associated in practice with Dr. A. E. Amundsen in Little Falls on March 1. A graduate of the University of St. Louis Medical School, Dr. Schmitz served his internship at a hospital in Wheeling, West Virginia. After being discharged from the army early in 1947, he began practice with his brother, Dr. E. J. Schmitz, in Holdingford.

In an address in Chicago early in March, greater study of the heart was urged by Dr. Ancel Keys, director of the University of Minnesota's laboratory of physiological hygiene, when he predicted that heart diseases will claim 1,200,000 persons a year in this country by 1960.

* * *

Recently appointed to the Minnesota State Board of Health and Vital Statistics, Dr. Theodore H. Sweetser, Minneapolis, replaced Dr. Erling S. Platou of Minneapolis, a board member since 1933. Dr. Ruth E. Boynton, also of Minneapolis, was reappointed to the board. The appointments were for three years each.

* * *

Four papers were presented by Dr. Louis A. Brunsting, Rochester, at a meeting of the New Orleans Graduate Medical Assembly in New Orleans during the last week of February. The papers were entitled "The Treatment of Psoriasis," "Recent Advances in Dermatology and Syphilology," "Hidradenitis Suppurativa," and "Early Recognition of Cancer."

* * *

Two Rochester physicians were on the program of the Cascade Farm Bureau when it met in the Rochester city hall on February 13. Dr. W. V. Leary discussed the x-ray survey being conducted in Olmsted County at the time, and Dr. C. G. Sutherland thanked members of the bureau for their support in the March of Dimes campaign.

* * *

Plans for setting up immunization clinics for children of school and preschool age were discussed at a citywide meeting of Minneapolis Parent-Teachers Association health chairmen on February 19. It was planned that the clinics would provide the initial immunization series for preschool children and booster doses for children already in school.

* * *

Speaking at a meeting in Worthington on February 11, Dr. F. L. Schade, president of the Southwestern Minnesota Medical Society, described suggestive signs and symptoms of cancer and pointed out that more than 170,000 persons in the United States died from cancer in 1947. The title of Dr. Schade's address was "Cancer, Its Detection, Diagnosis and Control."

* * *

Following his discharge from the army in December, 1947, Dr. P. M. Geiser settled in Alexandria on February 9 to become associated with the Alexandria Clinic. Dr. Geiser received a B.S. degree in medicine from the University of North Dakota and his M.D. degree from the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C., in 1944. He served his internship and a residency at St. Mary's Hospital, Minneapolis.

* * *

In Deer River, Dr. A. L. Koskela and his brother, Dr. L. E. Koskela, assumed management and operation of the Deer River Community Hospital on March 1, as president and secretary, respectively. Dr. A. L. Koskela purchased the hospital building and clinic from Dr. G. A. Miners and Dr. H. R. Anderson in September, 1947.

* * *

After being affiliated with the Community Co-operative Health Center in Two Harbors since January 3, 1947, Dr. Ralph Papermaster presented the board of directors with his resignation on February 28, to be effective June 1. Dr. Papermaster announced that he will continue in private practice in Two Harbors, expecting to make his home permanently in the city.

* * *

Dr. J. J. Heisler has opened an office at 6224 Lyndale Avenue South, Richfield (Minneapolis suburb), where he is conducting a private practice in the afternoons. A staff physician at Minneapolis Veterans Hospital for the past year, he is continuing to devote forenoons to his work there. Dr. Heisler is a graduate of Temple University Medical College.

* * *

Dr. Stewart Thomson, associate professor of public health at the University of Minnesota, has taken the late Dr. W. A. O'Brien's place as radio commentator on health topics under the sponsorship of the Minnesota State Medical Association. Dr. Thomson's twice-a-week broadcasts, according to every indication, are receiving a very favorable reception from the laity.

* * *

Principal speaker at a meeting on March 9 of the Duluth Health Council, newly formed co-ordinating unit for twenty-four local agencies, was Dr. Donald A. Dukelow, director of the Health and Medical Care Division of the Minneapolis Council of Social Agencies. Dr. Dukelow was introduced to the group of public health workers from Duluth and neighboring communities by Dr. Mario Fischer, Duluth city health director.

* * *

The medical situation in Luverne was expected to be back to normal by March 1. For several weeks before that the entire medical burden had been carried by Dr. F. W. Bofenkamp and Dr. J. S. Burleigh. However, on February 22, Dr. O. W. Anderson returned from the

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uth, and by the end of that week, Dr. C. L. Sherman as expected to arrive home from Rochester, where he d undergone an operation.

* * *

Stating that although there are still 100,000 new cases rheumatic fever annually, Dr. Thomas Hall, of the niversity of Minnesota pediatrics department, who oke at a pediatrics continuation course in early March, id that the nation's total "case load" of rheumatic fever ctims is diminishing each year. He gave as one of e principal reasons for the decrease, the increasing vareness of parents and physicians alike of the condi- ns which can lead to the disease.

* * *

Albany acquired a new physician early in February hen Dr. John J. Smyth began practice in the city as associate of Dr. F. H. Baumgartner. Dr. Smyth, a aduate of the University of Iowa College of Medicine 1944, served his internship at St. Mary's Hospital, uluth, after which he became a resident physician at opeming Sanatorium. He then served in the navy for ie and a half years and was discharged at the end 1947.

* * *

In a talk before the Jean Templeman Nurses Legion st in Saint Paul on March 4, Dr. Harold S. Diehl, an of medical sciences at the University of Minne- ta, discussed the heart research professorship to be onsored by the American Legion in Minnesota. Serv- es of the most able scientists in the country will be ught with professorship funds provided by the legion, he stated. The $500,000 endowment campaign, now being conducted by the state department of the American Legion, will end on May 23.

* * *

The St. Louis County Advisory Committee on Tuberculosis met in Virginia on March 1 to plan future operations of the county's mobile x-ray unit. Completion of a citywide x-ray survey in Duluth, scheduled for April, would finish the coverage of St. Louis County by mobile unit, a task begun in September, 1943. Meeting with the committee to determine future continuance of the chest examination plan were Dr. R. W. Backus, director of the mobile unit, and Dr. G. A. Hedberg, medical director of Nopeming Sanatorium.

* * *

Dr. E. G. Oppen, Minneapolis, has announced the association of Dr. S. G. Egge in the practice of medicine, with offices at 427 La Salle Building in Minneapolis. Dr. Egge, who was graduated from the University of Minnesota Medical School in 1943, interned in Seattle, Washington, then served in the army medical corps for two and one-half years. During his period of military duty he served as a neuropsychiatrist at the Hospital Center, Camp Carson, Colorado, and as a medical officer with the 86th Infantry Division in the Southwest Pacific.

* * *

Two busy days were spent in Salt Lake City in March by Dr. H. W. Walters of Rochester. On March 8 he presented a paper entitled "The Liver and Biliary Tract in Relation to Surgical Lesions" at a meeting of the



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Salt Lake County Medical Society. On the morning of March 9 he spoke to medical students of the University of Utah on the subject, "Medical Education in Relation to Clinical and Experimental Studies of Disease." That evening, at a meeting of the Salt Lake Surgical Society, he presented a paper entitled "A Comparison of Vagotomy and Other Surgical Procedures in the Treatment of Peptic Ulcer."

* * *

Resignation of Dr. F. M. Feldman, Rochester, as city health officer was announced on February 21. Dr. Feldman resigned from the office, after serving for seven years, to accept a position with the United States Public Health Service as director of the central co-ordination and analysis office of the tuberculosis study section of the Division of Research Grants and Fellowships. In his resignation he stated that he had arranged to stay in Rochester until June 1, if necessary, in order that the changeover to his successor could be carried out with the least disruption of the city health program.

* * *

Social and health workers from four counties, meeting in Winona on February 19, heard Dr. David T. Carr, Rochester, urge that the old-fashioned social stigma against tuberculosis be transformed into a stigma against not treating it. Pointing out that tuberculosis is in the No. 1 spot in robbing the nation of useful man-years, Dr. Carr stated that public opinion should be against the person with tuberculosis who fails to submit to treatment. Dr. Carr's talk which was one of a series on the care and understanding of tuberculosis patients, was heard by social and health workers from Fillmore, Dodge, Olmsted and Winona counties.

* * *

Among physicians attending a five-day refresher course in pediatrics at the University of Minnesota during the first week of March were Dr. T. P. Groschupf, Bemidji; Dr. Henry Van Meier, Stillwater, and Dr. Charle M. Zeigler, Pine River.

Topics discussed at the course included infant feeding immunizations, pathology of cerebral palsy, the approac to the handicapped child, heart problems in childhoo and heart surgery, the Rh factor, and anemias of in fancy and childhood. Conducted by University of Min nesota staff members, the course was supported by th Minnesota Society for Crippled Children and Adults.

* * *

Discovery of another supplementary method for th diagnosis of cancer was announced early in March b Dr. George E. Moore, Minneapolis, who described th technique in the March issue of *Science*.

The method developed by Dr. Moore, who has a fel lowship in surgery at the University of Minnesota, i based upon the use of a Geiger counter and a radio active dye which is injected intravenously in patients The dye is retained by malignant tissue, and its pres ence is detected with the Geiger counter. Though no accurate in revealing most internal growths, the metho works almost perfectly in cancer of the central nervous system, Dr. Moore stated.

* * *

Approximately 800 physicians and surgeons from seven midwestern states and three Canadian provinces attended a two-day sectional meeting of the American College of Surgeons in Minneapolis on March 15 and 16.

Among Minnesota physicians who appeared on the program were Dr. Owen H. Wangensteen, Dr. L. Haynes Fowler, Dr. E. T. Bell, Dr. James M. Hayes, Dr. Stanley R. Maxeiner, and Dr. N. Logan Leven, all of the University of Minnesota, while Mayo Foundation faculty members from Rochester who spoke included Dr. John M. Waugh, Dr. Gordon B. New, Dr. Mark B. Coventry, Dr. Winchell M. Craig, and Dr. Fred Z. Havens.

* * *

In an article in the *Journal of the American Medical Association* early in February, an effective treatment for brucellosis was announced by four Minnesota physicians.

Dr. Wesley W. Spink, professor of medicine at the University of Minnesota, and his colleagues, Dr. James M. Shaffer, Dr. A. I. Braude, and Dr. Wendell H. Hall, reported the results of treating thirty-five cases of brucellosis, many with either streptomycin or sulfadiazine and nine with a combination of the two drugs. Of the nine patients treated with the sulfadiazine-streptomycin combination, all but one seemed to recover, and that one slowly improved after more intensive therapy. The drug combination appeared to be far more effective than any other treatment yet tried.



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Red Lake Falls' position as the only county seat in Minnesota without a physician ended on March 15 when Dr. Lester N. Dale, formerly of Crosby, opened offices the city.

* * *

After practicing at Foley for the past year, Dr. Ralph . Mach has become associated in practice with Dr. oseph E. Halpin at Rush City. A graduate of the niversity of Minnesota Medical School, Dr. Mach egan his new duties on March 1.

* * *

General chairman of the 1948 fund drive by the Hen-epin County chapter of the Minnesota Cancer Society Russell D. Ekblad, Minneapolis branch manager of the un Life Assurance Company of Canada. The annual ampaign for funds began on April 1. President of the Hennepin chapter, which is conducting the drive, is Dr. ames A. Johnson, Minneapolis.

* * *

In International Falls on February 26 it was announced that Dr. C. C. Craig would be honored by ity and County Employes Local 510. The union planned dedicate the patient's room it was sponsoring at the alls Memorial Hospital to Dr. Craig in recognition of is years of service to his community.

A native Minnesotan, Dr. Craig was a woodsman in he border country from 1895 until 1910. He then ntered the University of Indiana School of Medicine, rom which he received his medical degree in 1917. mmediately after graduation he returned to Koochi-hing County and International Falls, where he has ontinued to practice medicine for thirty-one years.

* * *

Forty-three Rochester physicians spend part of their pare time singing.

Under the direction of Dr. Bruce E. Douglass, they onstitute the Mayo Foundation Fellows Chorus, a group f young physicians who like to get together after their ork is done for the evening and sing. Organized in 943 by Dr. Douglass and Dr. Donald C. Balfour, Jr., he chorus is primarily for the enjoyment and enter-ainment of its own members, but it has also given sev-ral programs in Rochester and has appeared in concert vith other musical groups.

Chief soloist in the group is Dr. U. L. Seferovich of Belgrade, Yugoslavia, a widely known singer in his ative land before he went to Rochester for further nedical education. Assistant director of the medico-ocal organization is Mrs. Douglass, who also serves he chorus as accompanist and chief critic.

* * *

Ten orthopedic clinics for crippled children will be eld in Minnesota before summer arrives.

The clinics, which began in St. Cloud on April 3, re made possible by state and Federal funds and are art of the health and welfare program of the Minne-ota Division of Social Welfare, under the direction f Dr. F. F. Callahan, chief of the Medical Services Unit. Sponsored by Crippled Children Services, the linics are open to those under twenty-one years of age, nd services include medical examination, diagnosis and

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recommendation for treatment. Approximately 800 children were examined at the clinics held last fall.

Schedule for the spring clinics is as follows: St. Cloud, April 3; Austin, April 9; Faribault, April 10; Thief River Falls, April 17; Brainerd, April 24; Worthington, May 1; Detroit Lakes, May 8; Grand Rapids, May 15; Moose Lake, May 22; Morris, June 5.

Among groups co-operating in conducting the clinics are the Minnesota Public Health Association, Minnesota State Medical Association and local county medical societies.

LYON-LINCOLN COUNTY SOCIETY POSTGRADUATE EXTENSION COURSE

The thirty-seventh semi-annual postgraduate extension course of the Lyon-Lincoln County Medical Society began on April 20 in Marshall, Minnesota. The course consists of seven weekly dinner meetings followed by scientific programs, and will continue until June 1.

The scientific programs for the meetings, which were arranged by Dr. W. H. Valentine, Tracy, chairman of the program committee, are as follows:

April 20.—"The Role of the Antihistaminic Drugs in the Treatment of Allergy," by Dr. William S. Eisenstadt, Minneapolis.

"Some Metabolic and Endocrinologic Disturbances Which Masquerade as More Common Medical Conditions," by Dr. Edmund B. Flink, University of Minnesota Medical School.

April 27.—"Recent Advancements in Pediatrics," by Dr. James F. Bosma, Minneapolis General Hospital.

May 4.—"A Consideration of the Certain Variations in the Anginal Syndrome," by Dr. R. D. Pruitt, Mayo Clinic, Rochester.

May 11.—"The Pathology and Treatment of Glomerulonephritis," by Dr. Moses Barron, University of Minnesota Medical School.

May 18.—"Diverticula of the Gastrointestinal Tract" and "Recent Developments in Abdominal Surgery," by Dr. James A. Johnson, University of Minnesota Medical School.

May 26.—"Dermatology in General Practice," by Dr. Henry E. Mickelson, University of Minnesota Medical School.

June 1.—"A Fracture Conference on the Upper Extremities. Movies on Colles Fractures, and Discussion," by Dr. Earl L. Henrikson, University of Minnesota Medical School, and Dr. M. C. Nelson and Dr. Dan Moos, Minneapolis General Hospital.

BLUE SHIELD NEWS

Number of persons covered by Blue Shield as of March 15, 1948	12,687
Number of Blue Shield cases paid on March 15, 1948	56
Total for 1948	87
Amount paid on Blue Shield cases on March 15, 1948	$2,215.88
Total for 1948	$3,307.38

In attending various county medical society meetings we have been asked many questions that we feel should be answered and cleared up. It is only logical to assume that if these questions arise one place they will come up in another. As it would be practically impossible to contact each physician in the state and answer his questions individually, we are going to take advantage of the generosity of MINNESOTA MEDICINE in allowing Blue Shield space, and use it to answer the more important questions.

We have had many questions asking how the physician is to ascertain the patient's income, that is, whether it is more or less than $1,500 for the single person or more or less than $2,500 for the husband and wife or family. Those of us who have been asked this have given the answer, "What do you do now?" That, of course, requires a little more explanation.

First of all, we would like to explain the income limits. When Blue Shield was first considered, many such plans throughout the country were studied, that is, those with service contracts, those with indemnity contracts and those with service and indemnity contracts. It was finally decided by the House of Delegates that the Minnesota Medical Service, Inc., should offer a service and indemnity type of contract. The income figures under which service benefits would be allowed were arrived at by studying the figures and actuarial experience of other plans and also by the consensus as to what the limit should be in Minnesota. The limits were then set at $1,500 for the single person and $2,500 for the family. The $2,500 for the family includes the

alaries of all employed persons in the family who contribute to the support of the family. It also includes eal and other assets that a person may have, such as a farmer who has a large farm and derives most of his food, such as meat and vegetables, from it.

It may be interesting to note that in the various Blue Shield plans the income limits vary from $1,500 for a single subscriber to $5,000 for a family. The limits common to most plans are $2,000 for a single subscriber and $3,000 for a family. In Minnesota, about 20 per cent of the population is eligible to receive service benefits.

Now to get back to the question. The person's income status could be determined either by the corporation or by the attending physician. If the corporation were to determine the subscriber's income status, it was felt that it would be incorrect in many instances. For example, if at the time an applicant enrolled in Blue Shield he were asked to indicate whether he was a Limited subscriber or an Unlimited subscriber, he might truthfully state Unlimited but a year later, after changing jobs, he might become a Limited subscriber. Thus, if such a subscriber were treated by a participating doctor of medicine, the corporation would treat this subscriber as Unlimited which would be very unfair to the physician. Secondly, if the corporation were to determine the subscriber's status, such determining would tend to interfere with the patient-physician relations, which the contract definitely states it will not do. As a result, it was felt that since the physician is in direct contact with the patient, knows the patient's home life, his occupation and his status in the community, he (the doctor) was the most logical person and in the better position to determine the patient's income. Further, the physician is accustomed to doing this very thing in his present relationship with his patients.

In completing the form, consider the patient as you do now, and if you feel that his income and assets would place him in the Limited class, place him there. If the patient is one whom you would ordinarily charge a low fee, show him as Unlimited. In other plans throughout the country, this procedure has been carried out, and a very small percentage of the subscribers raise any question about being listed either as a Limited or as an Unlimited subscriber. In the event such a question should arise, contact the Blue Shield office and every effort will be made to help you.

HOSPITAL NEWS

In Le Sueur, at a meeting of the board of directors of the Commercial Club on February 9, a five-man committee was named to formulate a plan of action in regard to the hospital construction program proposed in Minnesota. Under the plan worked out by the Minnesota Department of Health, Le Sueur is in eighth place in the state for Federal funds to aid in building a suggested thirty-three-bed hospital. Named as chairman of the committee was Dr. S. Ericson.

* * *

Under a new plan developed through the co-operation of the Bemidji Medical Society, the Health Service of the Bemidji State Teachers College now provides com-



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plete hospitalization, medical and surgical services for up to seven days to students suffering injuries or acute illnesses during the school year. The new plan was announced on February 20.

* * *

A maternity home was opened in Blooming Prairie on February 13. Operated by Mrs. Mark Vanderbrook, the home has been equipped to meet the approval of local physicians and is being run under standard hospital rules.

* * *

At the annual election of officers of the Virginia Municipal Hospital on March 9, Dr. David A. Sher was elected president of the hospital to succeed Dr. C. B. Cunningham. Dr. Sher is associated with the Lenont-Peterson Clinic in Virginia.

Elected as vice president of the hospital was Dr. John S. Siegel, Virginia, while Dr. John Kochevar, Eveleth, was named secretary.

* * *

In Princeton, Dr. W. R. Blomberg was elected president of the Community Hospital medical staff at a meeting on March 11. He succeeds Dr. A. T. Kapsner in the position. Other officers elected at the meeting of the staff were Dr. Elton F. Clothier, Elk River, who was named vice president, and Dr. William F. McManus, who became secretary-treasurer, succeeding Dr. James T. Crabtree.

* * *

New head of the St. Cloud Veterans Administration Hospital is Dr. Claud Lewis, former manager of the Fort Meade (S. Dak.) Hospital, who began his new duties in St. Cloud on March 20. He succeeds Dr. John Pringle, former head of the hospital, who has retired.

A graduate of Washington University Medical School, St. Louis, Missouri, in 1924, Dr. Lewis began his career with the Veterans Administration in 1931 as a physician at Downey, Illinois. In 1935 he was transferred to the Waco, Texas, VA hospital, and in 1944 he was commissioned by the army medical corps, serving as a lieutenant colonel with the VA. While still an army officer, Dr. Lewis became manager of the Fort Meade Hospital in 1946.

* * *

A delegation of five Clearbrook businessmen spent March 11 inspecting the Littlefork Hospital and conferring with Dr. Ralph D. Hanover, Littlefork. Purpose of the delegation was to gather information and ideas to aid in the planning of a hospital which the Clearbrook community expects to build during the summer.

* * *

Plans for the Caledonia Community Hospital began taking shape on March 16 when a committee met and elected temporary officers of the newly formed hospital association.

Official name of the group will be the Caledonia Community Hospital Association, Inc. Tentative plans of the organization call for purchase of the existing but inadequate hospital building and development of a program of alterations and repairs to increase both capacity and efficiency of the hospital.

Named as members of the temporary board of trustees, serving only until the first organizational meeting of the association members, were Dr. Jacob J. Ahlfs and Dr. Neil T. Norris, both of Caledonia.

* * *

A mass meeting was held in Waverly on March 23 to point out benefits of a proposed new hospital for the area. Among speakers at the meeting, which was held to enlist support of residents of Waverly and the surrounding area, was Dr. C. L. Roholt of Waverly.

The proposed hospital, which will be partly financed by Federal funds, will be a thirty-two bed hospital and will cost $200,000. A fund-raising drive, conducted by a group headed by businessmen of Howard Lake, had gathered $44,500 in pledges by the middle of March, aiming at a $50,000 goal by May 1 and an eventual goal of $70,000.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

ATHOLOGY OF TUMORS. R. A. Willis, D.Sc., M.D., F.R.C.P. Sir William H. Collins, Professor of Human and Comparative Pathology, Royal College of Surgeons, London. Formerly Pathologist to Alfred Hospital; Consultant Pathologist to the Austin Hospital for Chronic Diseases, and Lecturer on the Pathology of Tumours in the University of Melbourne, Australia. 1521 pages. Illus. Price $20.00, cloth. Butterworth & Co., Ltd., London, England, and C. V. Mosby Co., St. Louis, 1948.

SYCHOBIOLOGY AND PSYCHIATRY. A Textbook of Normal and Abnormal Human Behavior. Second Edition. Wendell Muncie, M.D. Practicing Psychiatrist; Chairman Medical Advisory Board, Seton Institute, Baltimore, Md.; Associate Professor of Psychiatry, Johns Hopkins University; Consultant in Psychiatry, U.S.V.A. 620 pages. Illus. Price $9.00, cloth. St. Louis: C. V. Mosby Co., 1948.

EART. A Physiological and Clinical Study of Cardio-Vascular Diseases. Aldo A. Luisada, M.D. Instructor in Physiology and Pharmacology, Tufts College Medical School Lecturer in Medicine; Lecturer, Postgraduate Division, Tufts College Medical School; Associate in Medicine, Beth Israel Hospital, Boston, Mass.; former Professor of Medicine, Ferrara, Italy. 653 pages. Illus. Price, $10.00, cloth. Baltimore: Williams & Wilkins Co., 1948.

HYSIOLOGY OF EXERCISE. Laurence E. Morehouse, Ph.D., Associate Professor of Physical Education, University of Southern California, formerly Research Fellow, Harvard Fatigue Laboratory; and Augustus T. Miller, Jr., Ph.D., Associate Professor of Physiology, University of North Carolina Medical School. 353 pages. Illus. Price $4.75, cloth. St. Louis: C. V. Mosby Co., 1948.

HE BATTLE OF THE CONSCIENCE. A Psychiatric Study of the Inner Workings of the Conscience. Edmund Bergler, M.D. 296 pages. Price $3.75, cloth. Washington, D. C.: Washington Institute of Medicine, 1948.

NCYCLOPEDIA OF MEDICAL SOURCES. Emerson Crosby, Kelly, M.D., F.A.C.S., Associate Professor of Surgery, Albany Medical College; Attending Surgeon, Albany Hospital; Editor, Medical Classics. 476 pages. Price, $7.50, cloth. Baltimore: Williams & Wilkins Company, 1948.

PERATIVE GYNECOLOGY. H. S. Crossen, M.D., and R. J. Crossen, M.D. 6th edition. 1,000 pages. Illus. Price, $15.00. St. Louis: C. V. Mosby Co., 1948.

The sixth edition of Crossen and Crossen's Operative Gynecology, published in 1948, is not a larger volume than the fifth edition of 1938, but it contains a greater number of illustrations and more of these are in color. In order to hold the book to reasonable size and still incorporate new material, the authors have eliminated much that was interesting from the historical standpoint.

The discussion on prevention and cure of carcinoma of the pelvic organs has been enlarged. Preoperative and postoperative radiation are discussed and advocated.

Various methods for the correction of retro-displacement of the uterus are again described, but, in the discussion, the authors make the statement that most of the symptoms ascribed to retro-displacement are due to complicating conditions. This is in line with the modern trend of thought of most gynecologists.

Irradiation treatment, after curettage for myoma of the uterus, is discussed at greater length than previously. The authors have used this method in a selected series of patients. The pro's and con's of such therapy are discussed.

Throughout the book, most of the discussions include references to more detailed papers on the various subjects, so that the reader may investigate the subject further.

This is an excellent summary for those interested in operative gynecology.

SELMA C. MUELLER, M.D.

UNIPOLAR LEAD ELECTROCARDIOGRAPHY. Emanuel Goldberger, B.S., M.D. 182 pages. Illus. Price $4.00. Philadelphia: Lea & Febiger, 1947.

This is an excellent monograph and a convincing plea for more extensive study of the heart's electrical potentials by the clinical cardiologist.

Wilson, in 1942, before the Association of Life Insurance Medical Directors of America, sounded the keynote for unipolar leads. Since then several fairly extensive studies along the same line of approach have appeared. Some of us who have employed the limb leads for twenty-five years and adopted the exploratory electrode on the chest with the indifferent pole at a distance have felt fairly secure in our interpretations.

The finer methods suggested in Goldberger's book will have to be adopted in some instances by us in spite of the extra labor, time, and expense involved.

The monograph is highly recommended to the clinical cardiologist.

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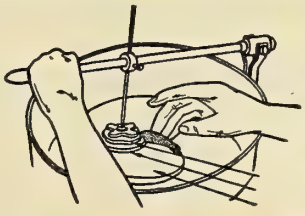
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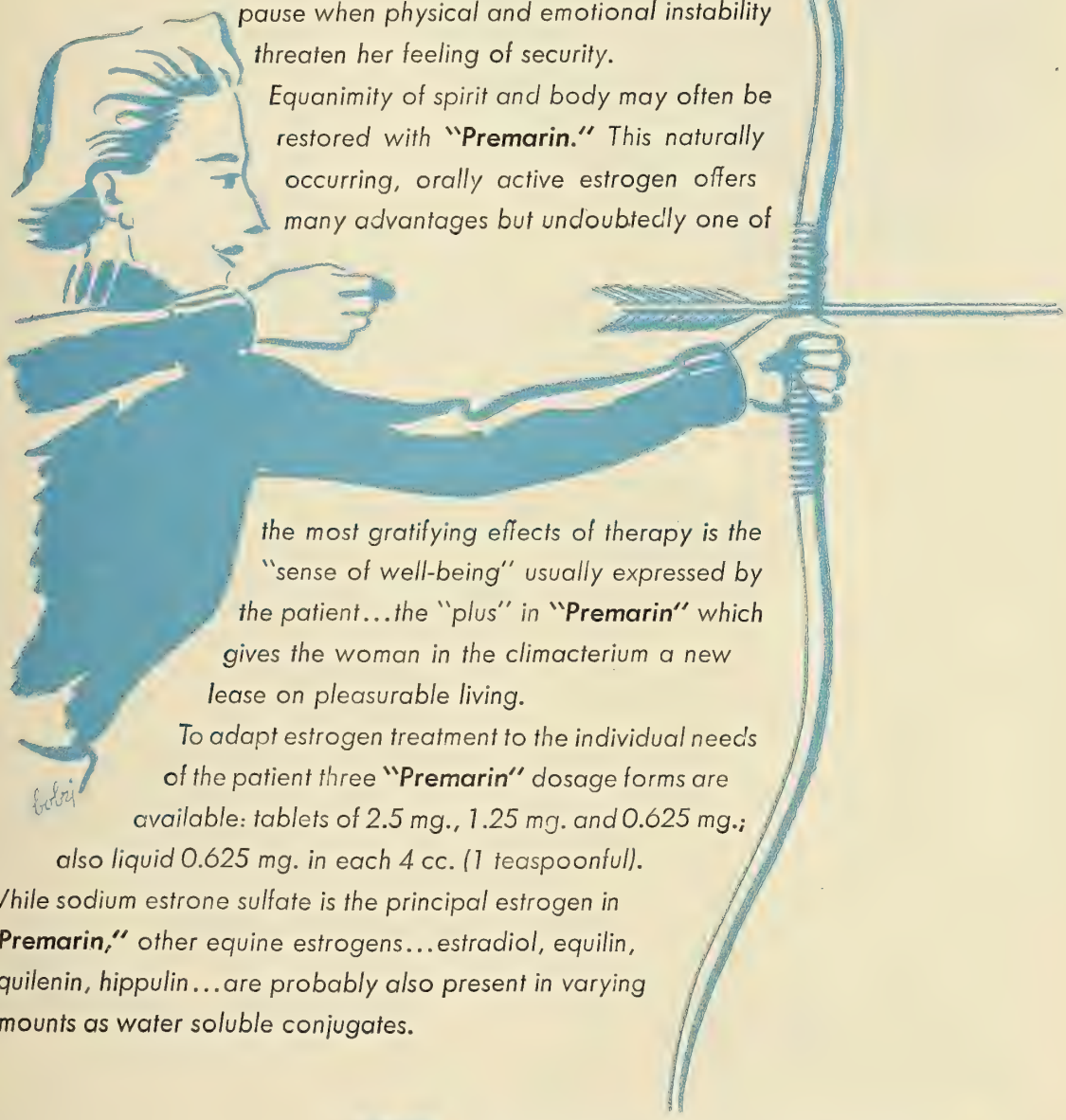
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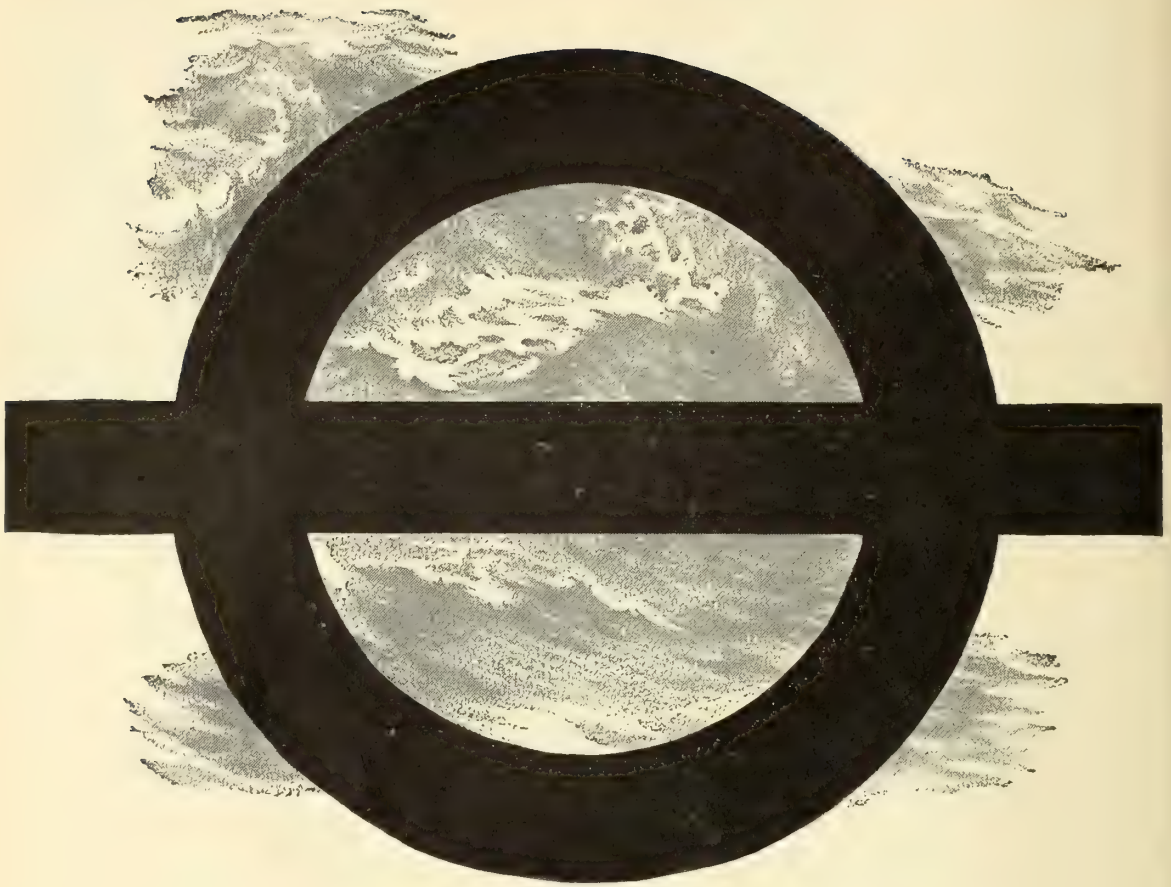
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1. Zondek, H.: The Diseases of The Endocrine Glands, ed. 4 (Second English), Baltimore, Williams & Wilkins Company, 1944, p. 421.

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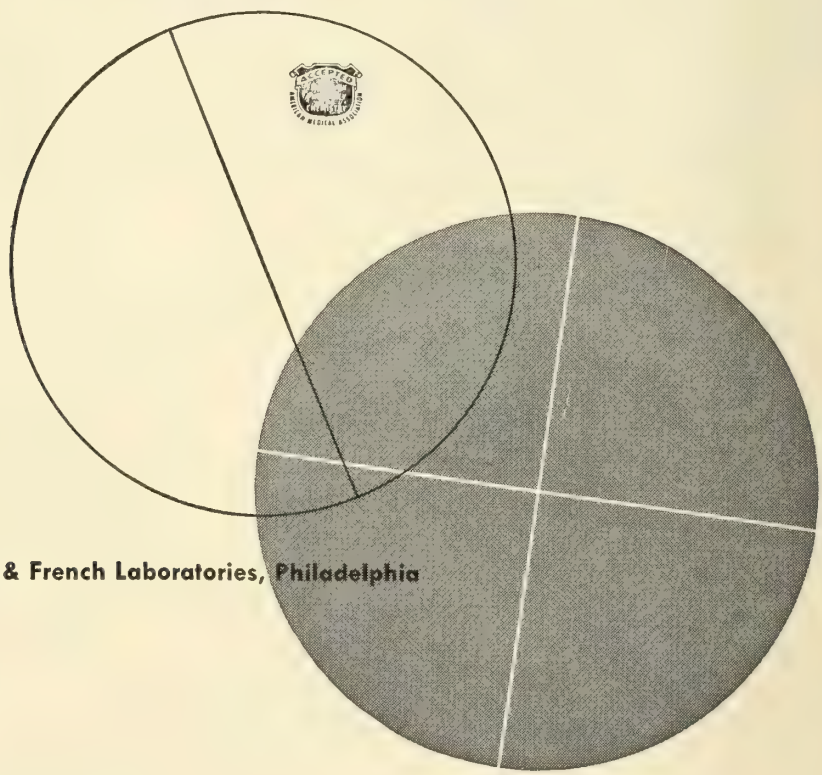
Many depressions are marked by morning tiredness, inertia, lassitude and retardation. 'Benzedrine' Sulfate, taken on awakening, frequently helps to lift the patient "over the hump" of the early hours.

Benzedrine Sulfate—where it shortens, eases, or even eliminates the patient's struggle with depression—may improve the tone of his entire day. While not always effective, Benzedrine Sulfate therapy certainly merits a fair clinical trial in depression marked by morning tiredness.

Tablets Capsules Elixir

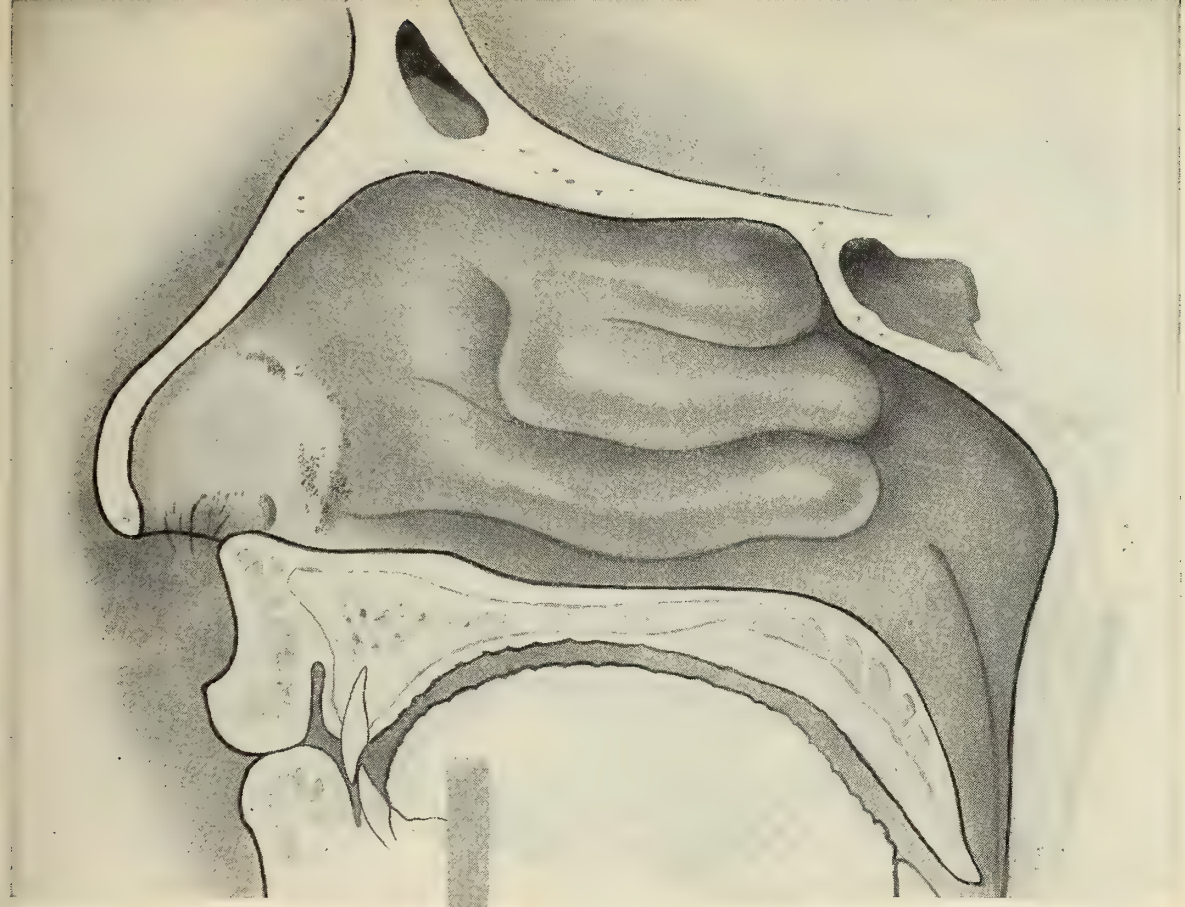
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Smith, Kline & French Laboratories, Philadelphia

*T.M.REG.U.S.PAT.OFF. FOR RACEMIC AMPHETAMINE SULFATE,S.K.F.



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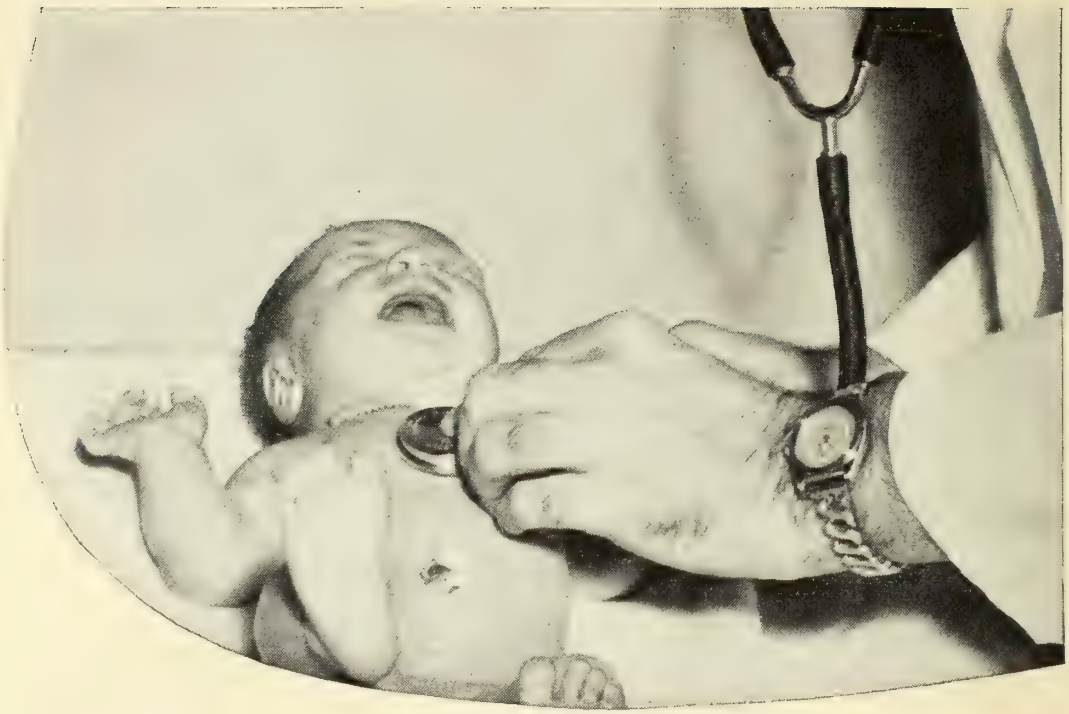
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For further information refer to page 592



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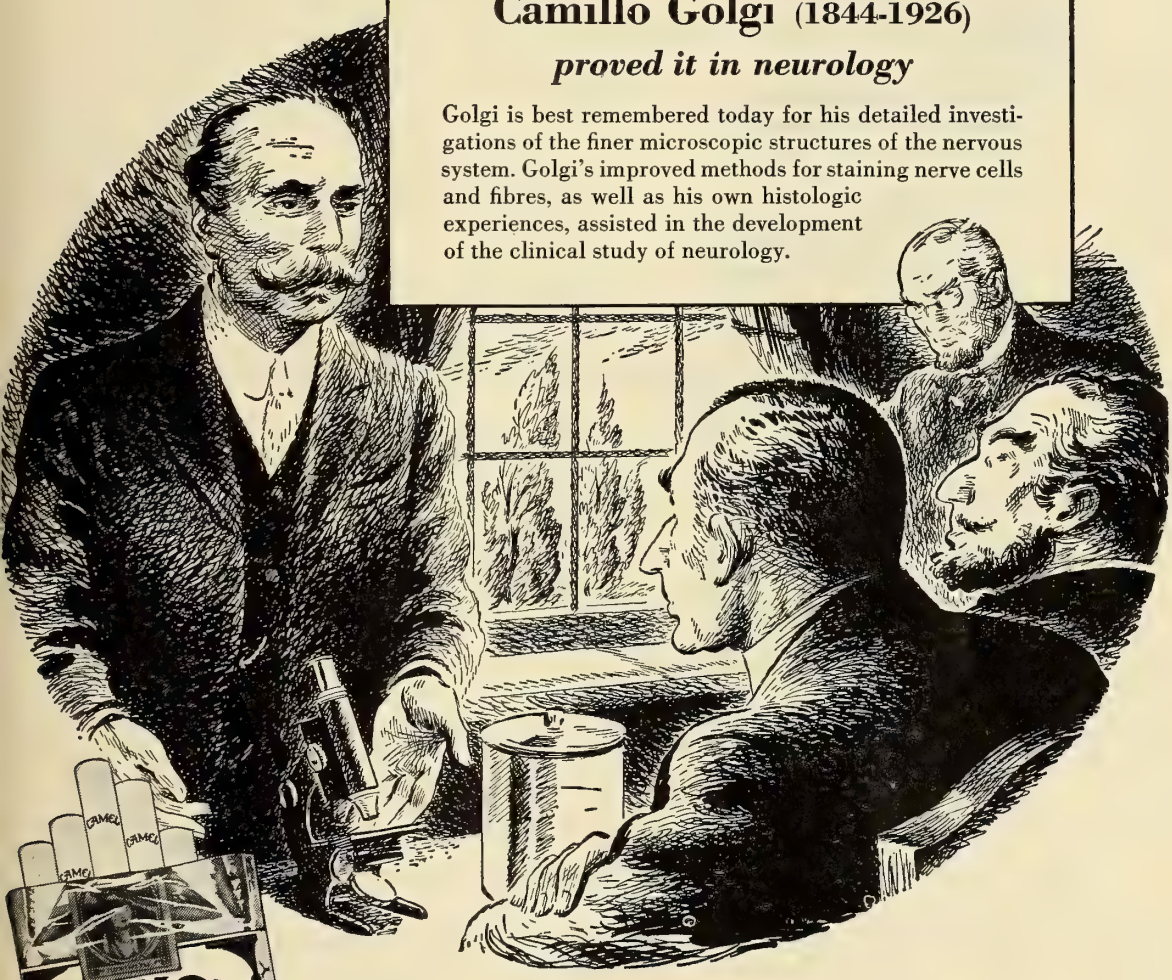
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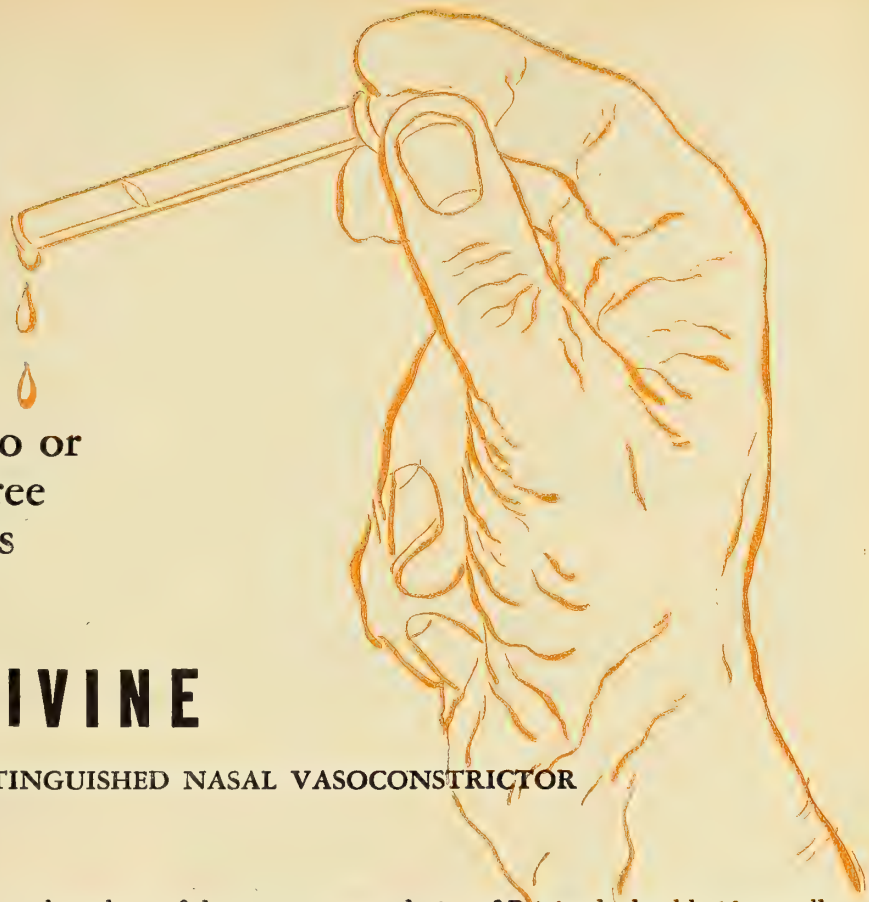
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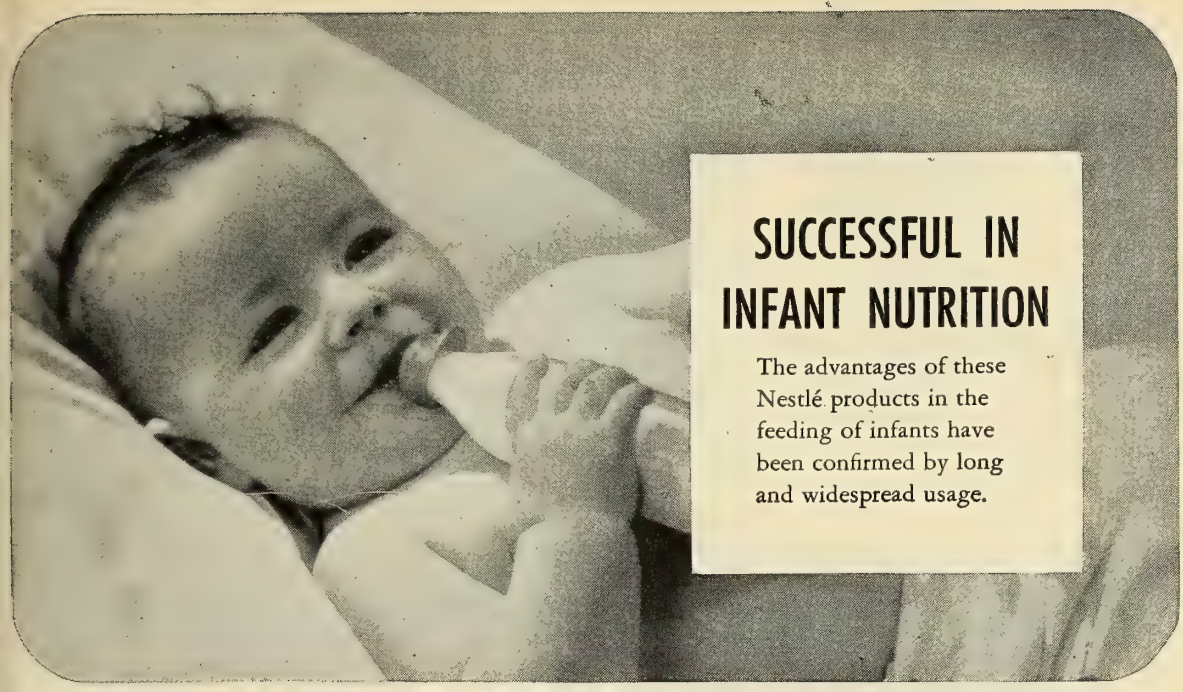
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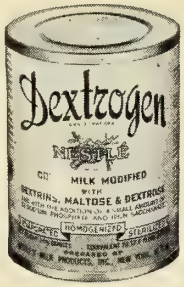
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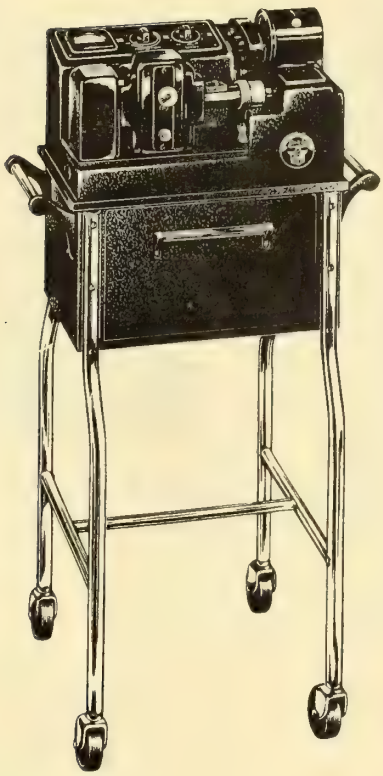
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Of primary consideration is the *accuracy* of the electrocardiograph . . . *excellence* with which there is no compromise.

The Beck-Lee Model E *provides* TRUE recording of the heart current. Here is a sealed dust-proof, quartz string instrument incorporating TRUE photo-electric timing and TRUE meter measured millivolt standardization.

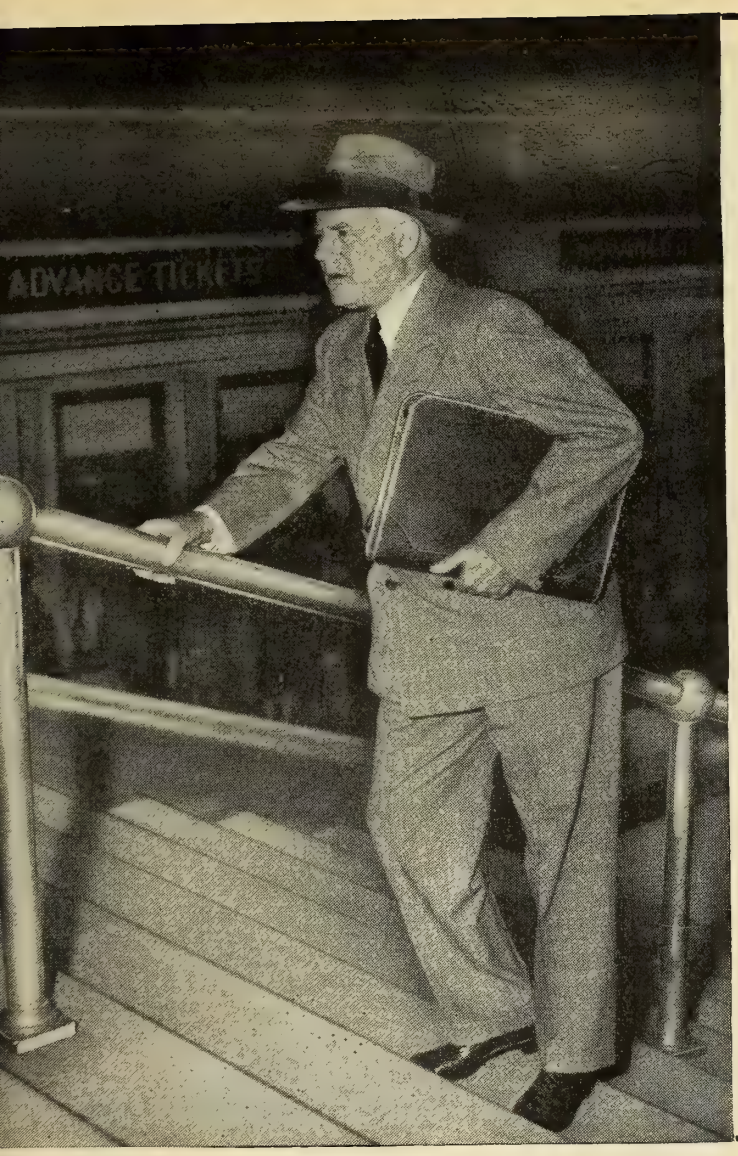
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ANGINA PECTORIS

and other Manifestations of

CORONARY INSUFFICIENCY

The following episodes may be prevented by appropriately regulated administration of a vasodilator having a *sustained* effect:

FOR THE PERSON

- ***who is compelled to stop and rest when climbing a flight of stairs.***
- ***who suffers "indigestion" and "gas" on exertion, or after a heavy meal.***
- ***who is stricken with precordial pain on unusual exertion or emotion, or when exposed to cold.***

The vasodilatation produced by Erythrol Tetranitrate Merck begins 15 to 20 minutes after administration, and lasts from 3 to 4 hours.

It is generally agreed that the acute attack of anginal pain is most readily relieved by the prompt removal of the provocative factor, and by the use of nitrites. For prophylactic purposes—to control anticipated paroxysms—the delayed but prolonged action *of erythrol tetranitrate is effective. Erythrol tetranitrate, because of its slower* and more prolonged *action, is also considered preferable for the purpose of preventing nocturnal attacks.*

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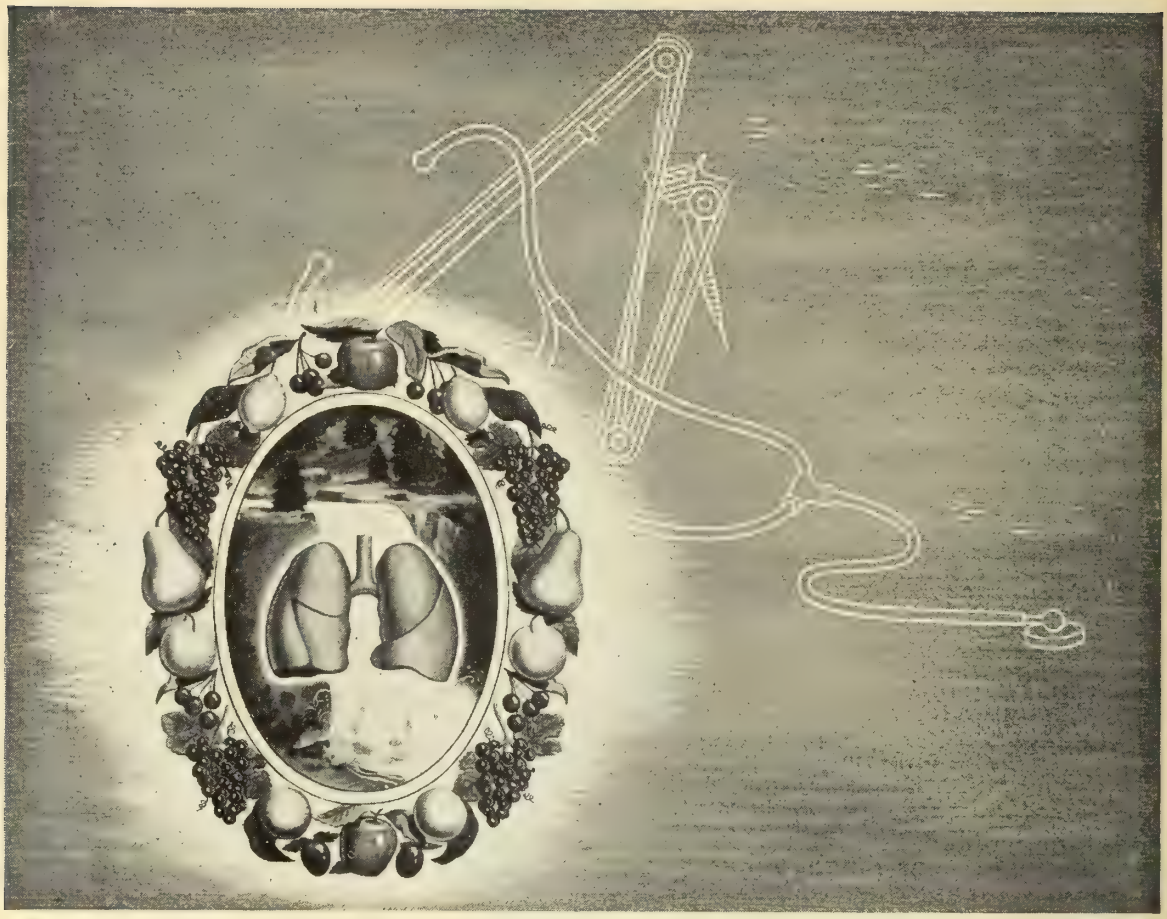
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Manufacturing Chemists

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The First Pathology

Both Medicine and Dentistry thank Giovanni Morgagni of Padua (1682-1771) for studying the body's *abnormalities*, as Vesalius of Padua had studied its *normal* structure 200 years before. Morgagni watched *bodily changes due to disease*, as Sydenham had watched *symptoms*—and found, not Descartes' "misplaced soul juices," but changes "as natural as water running downhill." Pneumonia? Then the lungs would be "liver-red," not "fresh as a garland of fruit" (the symbol of health).

Morgagni had no microscope. But the Prussian Rudolf Virchow (1821-1902) *did*. So he found that, in diseased flesh, it was really the *cells* which were changed or disordered.

With Morgagni's pathology, John Hunter (1728-1793) made surgery a science of surgeons rather than meatcutters—but he couldn't aid the defense of a doctor accused of poisoning a British lord with cherry laurel water in 1781.

Doctors Since 1899 (three years before Virchow died) have been more fortunate. In the Medical Protective policy they have found *complete* protection, *preventive* counsel and *confidential* service—backed by the world's largest legal staff of malpractice specialists.

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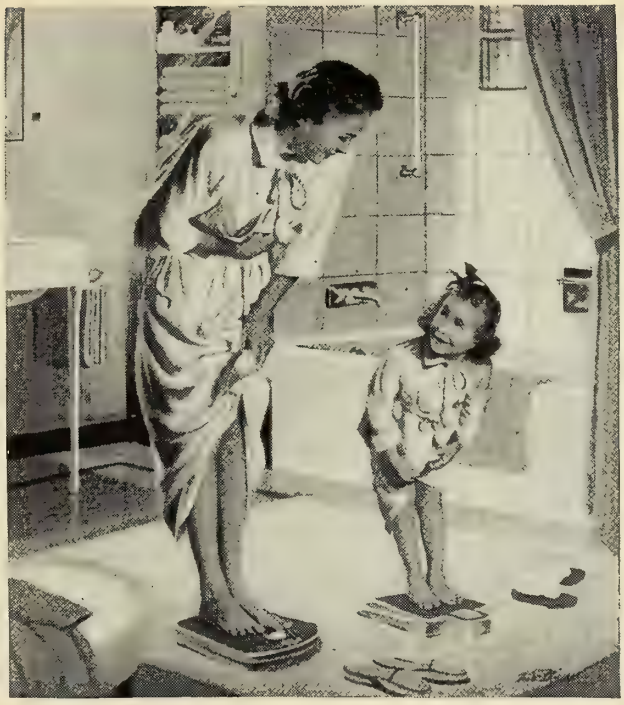
The advice is always "SEE YOUR DOCTOR"

To an audience of over 23 million people, in LIFE and other national magazines, Parke, Davis & Co. presents the message shown below. This is the 211th advertisement in the campaign in behalf of the medical profession, published continuously since 1928.

A reproduction in full color will be sent on request. Write Parke, Davis & Company, Detroit 32, Mich.

Some things you should know about reducing your weight

No. 211 in a series of messages from Parke, Davis & Co. on the importance of prompt and proper medical care.



It is an accepted medical fact that excess weight can impair your health and efficiency, and possibly shorten your life.

One person's proper weight may be quite different from another's however—even though their height and age are approximately the same. A large-boned, muscular person, for instance, should weigh considerably more than a small-boned person of the same height and age.

How much you should weigh is something to leave up to your doctor. Only your doctor can accurately judge whether your weight is within normal limits, or whether a loss or gain in weight is medically advisable.

If your doctor tells you that you weigh more than you should, it's just good sense to do something about it under his supervision. To undertake a weight-reducing program without proper medical guidance is a foolish, and often dangerous, thing to do.

It would be pleasant if there were some simple pill which would automatically and safely reduce your weight with no effort on your part. Unfortunately, *no such remedy exists.* So-called "reducing pills," taken without a physician's advice, are usually valueless and may be dangerous.

One type of pill, for instance, will cause you to lose weight—but only for a day or two! Its action is to remove water from body tissues, thus lowering your weight. But as soon as the water is replaced, the extra pounds are back again.

Another thing to beware of, in an effort to lose weight, is any sort of faddist diet.

A liquid diet may often be just as fattening as a normal one. A diet which concentrates on a particular food, and excludes most other foods, may deprive you of nutritive elements essential to the maintenance of good health.

See Your Doctor. Let him decide whether you should lose weight, how much you should lose, and how quickly. Let him tell you how you can do it without starving yourself, without risking your health. He can recommend a well-balanced diet. He can advise you about exercise. If he thinks medication will be helpful in your case, follow his instructions about dosage *exactly.* His advice is the only advice you can trust in matters that concern your health.

Makers of medicines prescribed by physicians

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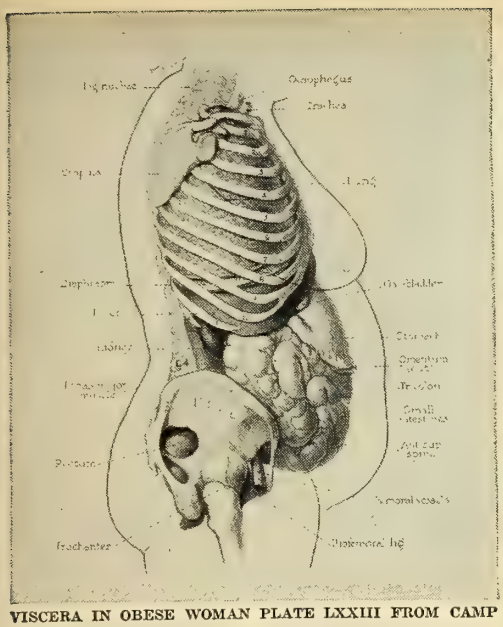
WE wish to extend to you a cordial invitation to visit us at Booths 64 and 65 at the 95th Annual Meeting of the Minnesota State Medical Association at the Minneapolis Auditorium, June 7-9 where there will be new and interesting equipment on display.

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VISCERA IN OBESE WOMAN PLATE LXXIII FROM CAMP ANATOMICAL STUDIES FOR PHYSICIANS AND SURGEONS

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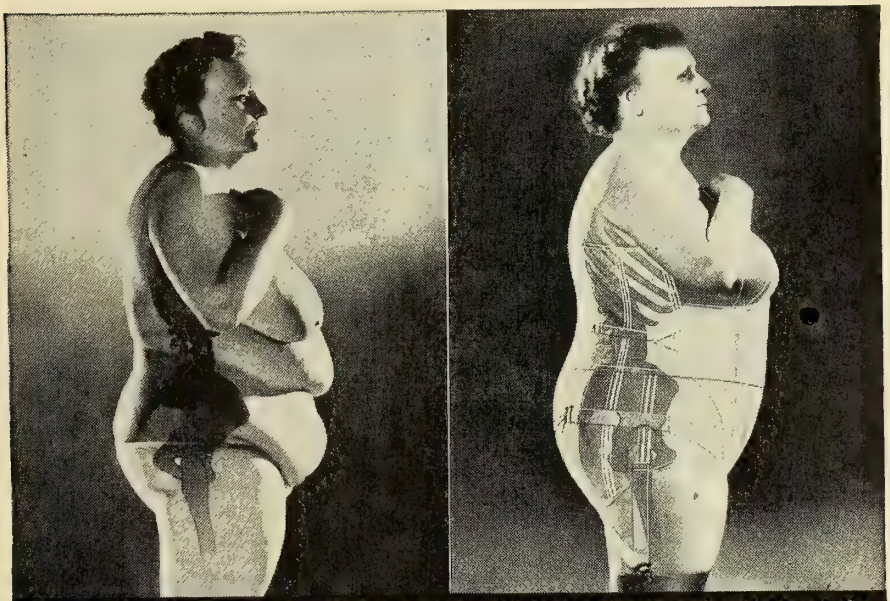
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The adjustment of the Camp Support lays a foundation about the major portion of the pelvic girdle. From this foundation, the upright sections of the support hold the load up and back and give excellent support to the lumbar and lower dorsal regions.

The holding of the load furnishes not only relief to the spine but also lessens the drag of the viscera upon the diaphragm.



Photographs—Obese patient with 3rd degree pendulous abdomen and arthritis of the spine before and after application of abdominal and breast supports. (Skeletons indrawn.)

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A POOR POINT OF VIEW!

. . . With so much going on in the world it's a shame to emulate the traditional position of the ostrich . . .

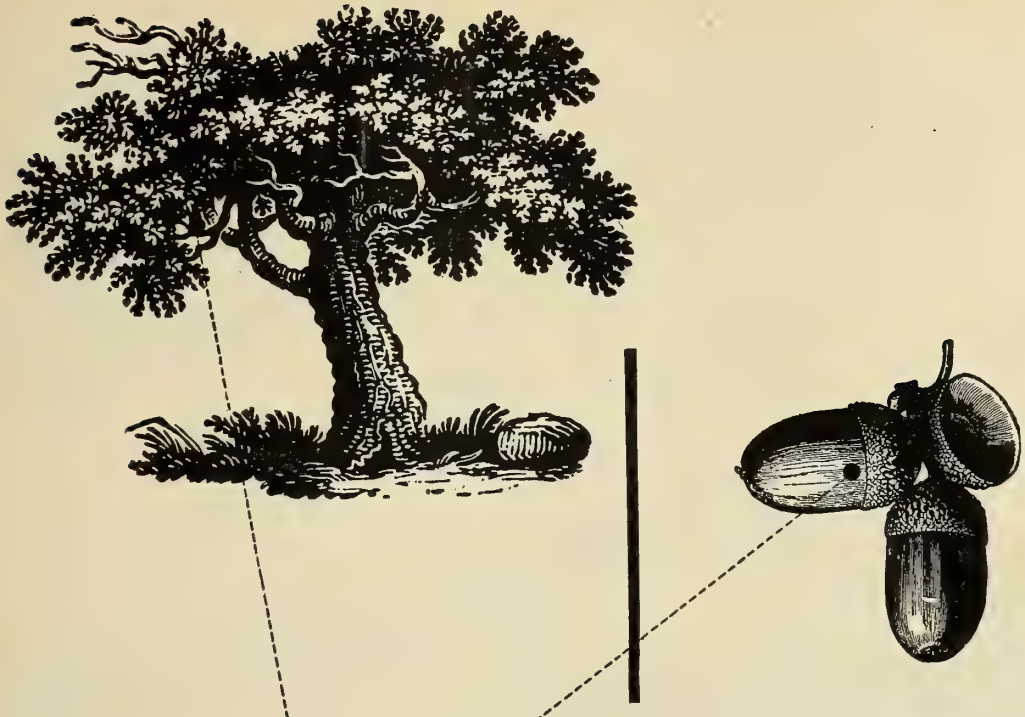
. . . Busy physicians, with heavy working schedules, often are tempted to "get away from it all" by laying aside their professional journals and relaxing with the latest "who dunit" murder mystery . . .

. . . Relaxation is fine, but too much is happening in the world of medical science and medical economics to remain out of professional circulation for more than a short time . . .

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* SEE INDEX TO CURRENT ADVERTISERS.



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Nor do all little children reach optimal height.

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May, 1948
34 State Journals
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American Journal Diseases Children

For surface infections...



New and Nonofficial Remedies · 1947 · states: "NITROFURAZONE.—Furacin... possessing bacteriostatic and bactericidal properties . . . effective in vitro and in vivo against a variety of gram negative and gram positive bacteria . . . is useful for topical application in the prophylaxis and treatment of superficial mixed infections common to contaminated wounds, burns, ulceration and certain diseases of the skin . . . Variant bacterial strains showing induced resistance to sulfathiazole, penicillin or streptomycin are as susceptible to nitrofurazone as their parent strains . . ." Furacin N.N.R. is available in the form of Furacin Soluble Dressing containing 0.2 per cent Furacin. This preparation is indicated for topical application *in the prophylaxis and treatment of infections of* wounds, second and third degree burns, cutaneous ulcers, pyodermas and skin grafts. *Literature on request.* **EATON LABORATORIES, INC., NORWICH, N. Y., — TORONTO, CANADA**

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 May, 1948 No. 5

THE DRUG ADDICT

E. M. HAMMES, M.D.

Saint Paul, Minnesota

DRUG addiction in its broadest sense applies to any individual who either for physical or psychological reasons has developed a compelling need for certain drugs.

A physician's wife, a bed-ridden invalid because of her many psychosomatic symptoms, was rehabilitated after prolonged hospitalization to the extent that she again attended to her home duties and became an asset to her community. That was eight years ago. However, she still needs and demands her 5-grain placebo capsule for sleep. Without it, she develops her own abstinence symptoms of fear, apprehension, nervousness and insomnia. Psychologically she is a drug addict to the same degree as the alcoholic who has to drown his sorrows or the morphine addict who requires his hypodermic to meet his personality difficulties.

Habit-forming drugs may be classified into two categories: the narcotic group, and the various types of sedatives and hypnotics. Since many recent articles in the literature have emphasized the dangers and accumulative effects of the bromides, this drug is gradually losing its popularity. However, the various hypnotics are amply replacing them with greater detriment to the patient in many instances. So many physicians still find it less time-consuming to give patients some sedative for their many psychosomatic complaints than to devote a little energy to the finding of a brief explanation of their functional symptoms and their significance. With psychosomatic medicine forging to the foreground, and with more thorough scientific training in this field, the medical profession is becoming more conscious of this important phase of daily practice.

According to Federal statutes, the narcotic drugs are opium and its derivatives, cocaine, marihuana, heroin and demerol, and addiction to these substances is legally narcotic drug addiction. For many years pharmaceutical laboratories have attempted to develop a pain-relieving non-habit-forming drug as a substitute for morphine. Both pantopon and demerol were so considered when first introduced to the medical profession. Unfortunately, the number of narcotic addicts due to pantopon and demerol is rapidly increasing. Recently, a similar drug, methadon (6 dimethylamine-4-4-diphenyl-heptanone-3), has been developed as an effective analgesic. In a recent article published by the United States Public Health Service,[4] it states that "it is the unanimous opinion of all who have been concerned with the evaluation of the addiction liability that methadon like morphine is dangerous with respect to habituation." Another new analgesic drug, AN-148, recently introduced, was given to 106 patients for relief of pain without any evidence of addiction.[1] However, in a more recent case of brachial plexus tumor, a definite dependency to this drug developed.[8]

Himmelsbach[3] stated that addiction to the opiate drugs embraces three related phenomena: (1) tolerance or the gradual decrease in the effect produced by the repeated administration of a drug; (2) physical dependence, which is manifested by the appearance of a characteristic illness if the drug is withheld, and (3) habituation or psychic dependence, which implies an intense desire for

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President's address, Minnesota Academy of Medicine, January 14, 1948.

From the Department of Psychiatry and Neurology, University of Minnesota Medical School.

the repetition of pleasurable effects associated with the use of a drug.

In the non-narcotic group are alcohol, paraldehyde, the various barbiturates, especially veronal, amphetamine or benzedrine, rarely ether by inhalation, and similar drugs. These differ in the main from the narcotic group in that they do not produce a physical dependence and their rapid withdrawal is accompanied by very slight abstinence symptoms.

Monroe and Drell[7] made a special study of the prison population at the U. S. Disciplinary Barracks, Fort Benjamin Harrison, Indiana, to determine the number of benzedrine addicts. Two hundred and sixty-four inmates (24.4 per cent) indicated they had used benzedrine, either in pill form or by chewing the strips from benzedrine inhalers. One hundred and thirty had taken it prior to enlistment in the army or prior to confinement. In a room of one of the guards, over 300 empty inhalers were found which had been sold to the inmates for from 75 cents to $1.50 per tube. The three main reasons for taking the drug were: it made the time go faster, it made them feel happier, and it made them talkative. Withdrawing the drug precipitated weakness, depression, gastrointestinal disturbances and tremor. Four of the inmates developed ideas of reference and hallucinations.

During the past year we had one patient who took a large amount of benzedrine and thyroid (dose undetermined) for a period of five weeks and developed an acute maniacal state and died from exhaustion. A postmortem examination revealed a marked hemorrhagic pulmonary edema. A second patient, who averaged 150 mg. of benzedrine daily for at least four months, developed delusions of infidelity about his wife and periods of viciousness and uncontrollable temper.

According to Hambourger,[2] more than 1,200,000,000 grains of barbiturates were sold in the United States in 1936. U. S. Census Bureau figures show that there were 171 suicides and 165 so-called accidental deaths due to the barbiturates during that same year. These cases are cited to illustrate the extensive use of some of these drugs, frequently considered harmless, and to point out their detrimental effects. The pernicious habit, quite prevalent among students, of taking benzedrine in the morning to keep alert for lectures and examinations, and of taking barbiturates at night to produce sleep, may cause serious consequences and should be definitely discouraged.

Certain types of individuals are more prone to become addicts than are others. Stille[11] has well stated that those who have a propensity to employ some artificial means of promoting the flow of agreeable thoughts, of emboldening the spirit to perform acts of daring, or of steeping in forgetfulness the sense of sorrow, are more likely to embrace narcotics and fall a victim of their enslaving effects than are those who do not possess these propensities.

In 1938, Kolb and Ossenfort[6] classified addicts into six main groups. In 1925, Kolb[5] had suggested a somewhat similar grouping based on a personality study of 230 addicts which included life history, heredity, personality defects, emotional reactions, intelligence and other characteristics.

Kolb's classification consisted of the following major categories:

1. Normal individuals, accidentally addicted because of illness.
2. Psychopathic diathesis.
3. Psychoneurosis.
4. Psychopathic personality without psychosis.
5. Inebriates in whom excessive alcoholic indulgence acts as a precipitating factor in the addiction.
6. Drug addiction associated with a frank psychosis, either organic or functional.

On the basis of this classification, Pescor[9] made a study of 1,036 patients admitted to the United States Public Service Hospital in Lexington, Kentucky, during the fiscal year July 1, 1936, to June 30, 1937.

He found that only 3.8 per cent came under Group 1, normal individuals accidentally addicted.

Group 2, the psychopathic diathesis, comprised the largest number (54.5 per cent). Their most frequent reason for addiction was curiosity and association with addicts.

Group 3, those with psychoneurosis, comprised 6.3 per cent. Therapeutic necessity caused by somatic complaints were the main excuse for their addiction.

Group 4, the psychopathic personalities, comprised 11.7 per cent, and their main reason was curiosity and association.

The fifth, or inebriate, group comprised 21.9 per cent, and the typical inebriate individual resorted to the drug as a means of sobering up after

alcoholic sprees. This psychopathic impulse which develops his craving for alcohol also compels him to take narcotics.

In the sixth group, there was only one patient suffering from senility, who took the drug to "set his mind at rest."

In a general way, there are two types of drug addicts: (1) the emotionally stable individual who acquires the addiction accidentally, and whose normal personality make-up will be re-established, after he recovers from his physical illness and is relieved from his drug addiction; and (2) the psychopathic individual who becomes an addict through curiosity or association, or as a sequence to his inadequate personality. The prognosis as to relapses and the method of treatment are radically different in these two groups.

Drug addiction is a universal problem. In order to determine its extent in Ramsey County, I reviewed the Ancker Hospital records. The total number admitted to Ancker Hospital from 1932 to 1947 (15 years) was 265. A few of these were nonresidents and some were admitted more than once. One hundred eighty-three were addicted to morphine, twenty to heroin, six to dilaudid, and thirteen were cocaine addicts. Six were habituates to paraldehyde and forty-seven to the various barbiturates. In only two per cent was the addiction acquired because of illness. To this number should be added the various drug addicts admitted to the private hospitals in Ramsey County. This information was not available. As most of the Ancker Hospital patients obtained their narcotic drugs from peddlers, each patient was thoroughly questioned as to the source of supply. In only one instance was this obtained. Evidently these patients were fearful that if any information were given their supply would be discontinued after their discharge from the hospital. One of our most interesting cases was a man of sixty-one, who was given a prescription for laudanum (Tr. Opii) for abdominal pain at the age of twenty. For forty-one years he took laudanum, up to 6 ounces daily, until the Harrison Narcotic Act was passed. He then entered Ancker Hospital voluntarily. With a gradual reduction treatment, he made a satisfactory recovery and remained well.

During the past fifteen years, we hospitalized and treated in our private practice forty-two drug addicts and had an opportunity to review the records of fifty-seven others—a total of ninety-nine narcotic addicts. Among this group were business and professional men, college graduates and farmers; eighty-eight were men, and eleven women. These differed in the main from the Ancker Hospital group in that because of favorable financial circumstances they could more readily obtain their narcotic drugs from prescriptions or similar sources. Nine of our women patients had received their first narcotic prescription or hypodermic from the family physician because of migraine headaches, severe menstrual pains, sciatica, duodenal ulcer and similar disorders. One of our demerol addicts, who developed the addiction while attending her sister who required demerol because of a malignancy, had been given, during previous two years, pantopon at least twice monthly for migraine headaches. Among the group of eighty-eight male patients the youngest was twenty-seven years old, the oldest eighty-one, and the average was forty-eight years. Morphine was used by every patient at some time during the period of addiction. In addition, eighteen resorted to dilaudid at irregular intervals, ten to demerol, five to cocaine, six to pantopon, two to heroin and six to codeine. The largest dose in two cases was 12 grains of morphine daily; twenty-six used alcohol to excess, and twenty-nine required hypnotics regularly. Eleven wives of these eighty-eight patients developed the narcotic habit instigated by their husbands. Only one of these wives was hospitalized under our supervision with her husband. Like the social drinker, many addicts love companionship.

The most oustanding difference between this group and any other group that has been studied is the fact that fifty-one (over 50 per cent) gave some physical cause for their addication, compared to 3.8 per cent or even less in other groups. Perhaps because of their better education and more secure environment, they rationalized and obtained some moral comfort in an attempt to justify their addiction. This attempt to utilize minor ailments as an etiologic factor is itself suggestive evidence of their psychopathic personality. Headache, rheumatism, arthritis, hernia, hay fever, asthma, frequent colds and hemorrhoids were some of the causative illnesses stated. Severe attacks of kidney stone, intestinal hemorrhages, lightning pains of tabes and malignancy were among the serious diseases given, and were perhaps justifiable reasons to develop a narcotic ad-

diction. Only twenty-nine (about 33 per cent) gave some emotional causative factor, such as nervousness, home and financial worries, overwork and experimental desire. In the remaining nineteen cases, no reasons were given by the patient for the addiction. When we consider all these etiologic factors in addition to the twenty-six who were alcoholic and the twenty-nine who required hypnotics, it would appear that, regardless of education or environment, the psychopathic personality types have the greatest tendency to develop drug addiction.

Observations of this comparatively small group of private patients conform to the statistical study by Pescor[10] of 100 male and 100 female patients admitted to the U. S. Public Health Service Hospital, Lexington, Kentucky. He found that the male addicts began the use of narcotics through association and curiosity (and I might add for minor ailments), and were inclined to use more than one kind of narcotic drugs. The female group became addicted for the relief of some painful or distressing physical condition and generally confined itself to the use of morphine.

According to Federal regulations, physicians are not permitted to dispense narcotics for patients except for definite diseases discovered during the examination of the patient. This excludes the indiscriminate writing of prescriptions to drug addicts drifting into physicians' offices. During the past year, a narcotic addict touring Minnesota was given seven dilaudid prescriptions for various amounts by seven different physicians during a period of two weeks. The trail of this individual was investigated by the Federal Narcotic Agents, to the embarrassment of several of these physicians.

The treatment of a drug addict cannot and should not be attempted unless he is willing to be hospitalized under proper regime and control, either voluntarily or through an order from the Probate Court. The period of hospitalization should be at least three months. It has been our custom to use the gradual reduction method. It is associated with less physical discomfort and pain, complications are very infrequent, and the patient is more co-operative and more willing to continue with the program, an important factor with patients voluntarily hospitalized. Frequently these patients are irritable, demanding and unreasonable. They are often undernourished and require high caloric diets and vitamins to improve their physical condition. Tonic doses of insulin are beneficial. Sedatives should be given as necessary to alleviate the many functional complaints and symptoms. We have found it very satisfactory to give sedatives in plain capsules, which enables one to lessen the dose gradually without altering the size of the capsule. Frequently, these patients are familiar with all the known sedatives and hypnotics, and recognize them by the color of the capsule.

The most important phase of the treatment is to re-educate the individual, to increase his ability to endure discomfort, to teach him to exercise more self-control, to correct his habit of taking some medication whenever he is unhappy or uncomfortable, to assist him in the readjustment of some of his social and economic problems and in his rehabilitation. The danger and tendency to a relapse should be fully explained to him, for the "cock-sure" attitude is always a serious and uncertain one. After discharge from the hospital these patients further require careful supervision and reassurance for several months at least, to assist them in maintaining their proper morale and co-operation.

At the best, when treating psychopathic personalities, the future is always uncertain, and only with prolonged and encouraging guidance can one anticipate permanent results.

Through the efforts of the late Herman Johnson, for many years chairman of the Public Policy Committee of the Minnesota State Medical Association, in conjunction with the excellent supervision of the Minnesota State Board of Medical Examiners and its attorney, Manley Brist, Minnesota holds a unique position for the care of its physicians who are unfortunate enough to become drug addicts. It is difficult to understand why any physician should become addicted to narcotics, being fully aware of the dangers of and the distressing effects from such an addiction, besides the risk of being deprived of his medical license. The fact that the drug is so easily accessible, the mistaken belief that an occasional hypodermic to relieve fatigue or mental distress is harmless, and the egotistical attitude that one can deceive the Federal narcotic agents, are probably the main reasons for the initiation of the narcotic addiction.

Any physician licensed in the State of Minnesota and detected as a narcotic addict by the Fed-

(Continued on Page 503)

THE MORE COMMON METHODS OF INGUINAL HERNIA REPAIR

A Comparison of the Recurrence Rates

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IN the preparation of this article, the different techniques, suture materials and anatomic structures used in hernia repair, as described in a large series of reports, have been studied in order to compare them and to determine, if possible, the most suitable method of repair. Several other aspects of hernia will be discussed, such as the time of recurrence, type of recurrence, recurrences in the young and aged, and also the procedure used by one of us in St. Barnabas Hospital, Minneapolis.

Techniques

The most common method of repair of inguinal hernia has been the Bassini technique, introduced in 1890, in which the internal oblique and transversus abdominis muscles are sutured to Poupart's ligament under the cord. The sac is ligated high. There have been many other methods used since then. They differ from the Bassini operation in the placement of the cord and in the use of different anatomic structures for closing the defect. The more common variations are the Halsted I, placing the cord subcutaneously; the Halsted II and Ferguson, with the cord deep to the internal oblique; the E. Wyllys Andrews, with imbrication of the external oblique around the cord; Bloodgood's rectus muscle or flap closure; Edmund Andrews' tucking of the transversalis fascia; McArthur and Gallie fascial strips; Wangensteen's pedicle flap, and the McVay Cooper's liagment repair. By a comparative study we have hoped to determine what method should be used in the repair of inguinal hernia. Only reports in which most of the cases were followed by physical examination are included. A follow-up by letter is not reliable, as shown by Taylor, and by our experience.

Bassini

Bassini's operation consists primarily of high ligation of the sac and suturing of the internal oblique and transversus abdominis muscles to Poupart's ligament under the cord (Fig. 1). Results from this technique are indicated in Table I.

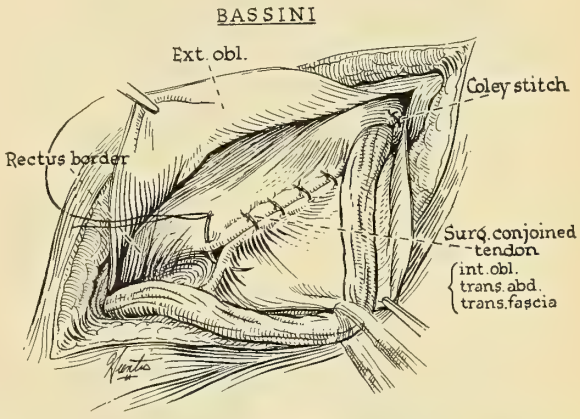


Fig. 1. Bassini operation. The floor of the canal is closed with interrupted stitches by suturing the surgical conjoined tendon to Poupart's ligament.

TABLE I. RECURRENCE RATE—BASSINI

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	972	56	6.8	9 mos.-10 yrs.
Coley, B. L. (1924)	332	28	8.7	6 mos.-over
Erdman, S. (1923)	532	17	3.2	3 mos.- 7 yrs.
	1,836	101	Av.: 5.5	
Direct Hernia				
Shelley (1940)	94	11	11.7	9 mos.-10 yrs.
Erdman, S. (1923)	185	29	15.6	3 mos.- 7 yrs.
Fallis (1936)	127	11	8.6	2 yrs.-over
	406	51	Av.: 12.5	
Recurrent Hernia				
Shelley (1940)	59	12	20.0	

Halsted I

In Halsted's first operation the cord was transplanted subcutaneously above the external oblique aponeurosis. The internal oblique muscle was incised transversely for a short distance at the internal ring and the cord moved into the incision. The edge of the internal oblique was then sutured to Poupart's ligament under the cord. The eternal oblique then was imbricated under the cord, thus eliminating the external ring completely (Fig. 2). At first, Halsted excised the larger veins of the cord. However, later he discontinued this pro-

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Presented before the Minneapolis Surgical Society, November 6, 1947.

cedure because of the high incidence of atrophy of the testicle and hydrocele. The recurrence rate from this procedure is indicated in Table II.

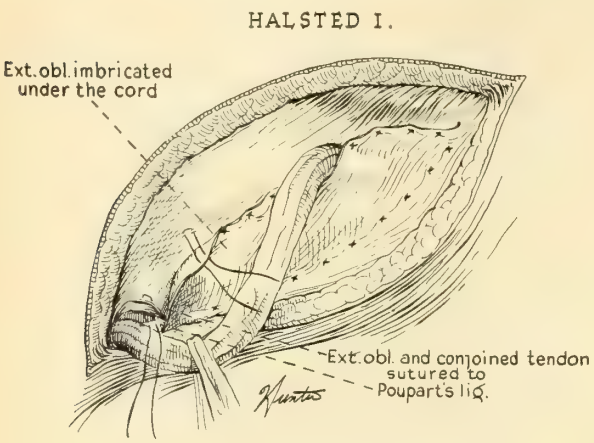


Fig. 2. Halsted I operation. All layers of the abdominal wall are imbricated under the cord. The external ring is obliterated.

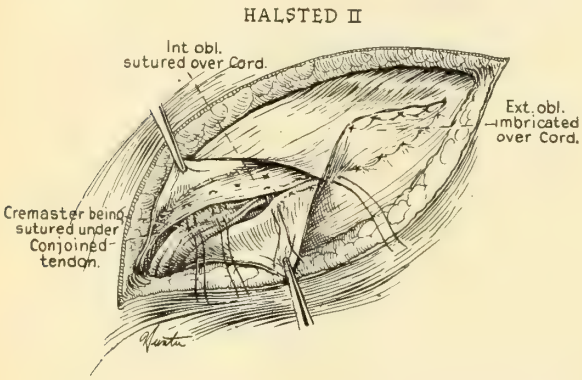


Fig. 3. Halsted II operation. All layers of the abdominal wall are imbricated over the cord. The internal ring is obliterated.

TABLE II. RECURRENCE RATE—HALSTED I

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	179	16	9.2	
Bloodgood (1899)	238	15	6.2	6 mos.-10 yrs.
Taylor (1920)	19	7	36.8	6 mos.-20 yrs.
	436	38	Av.: 8.7	
Direct Hernia				
Shelley (1940)	81	14	16.9	
Taylor (1920)	20	5	25.0	
Glenn & McBride (1936)	32	2	6.26	6 mos.-2 yrs.
Erdman, S. (1923)	64	10	15.6	
	197	31	Av.: 15.7	
Recurrent Hernia				
Shelley (1940)	8*	3	37.5	
	16†	6	37.5	
Glenn & McBride (1936)	20	6	30.0	
Erdman, S. (1923)	17	4	24.0	
	61	19	Av.: 31.0	

*Indirect.
†Direct

Halsted II

In 1903, Halsted described his second operation in which the cord is placed deep to the internal

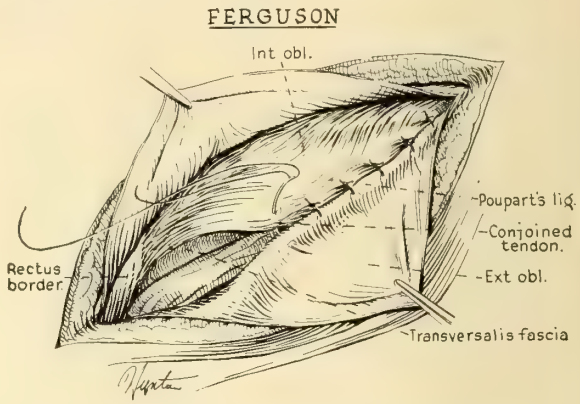


Fig. 4. Ferguson operation. This is very similar to the Halsted II operation. The edge of the surgical conjoined tendon and internal oblique is sutured to Poupart's ligament over the cord.

oblique muscle. The cremasteric muscle and cord are sutured deep under the internal oblique muscle with interrupted mattress stitches, and the free border of the internal oblique is sutured over the cord to the Poupart's ligament. The external oblique is imbricated above this (Fig. 3). The internal ring is obliterated.

TABLE III. RECURRENCE RATE—HALSTED II, FERGUSON

	No.	Recurrence	Per Cent Recurrence	Follow-up
Indirect Inguinal Hernia				
Shelley (1940)	163	8	4.8	
Taylor (1920)	732	31	4.2	
Fallis (1936)	673	55	8.3	
Erdman, S. (1923)	112	3	2.6	
Glenn and McBride (1936)	253	6	2.3	
	1,933	103	Av.: 5.3	
Direct Hernia				
Shelley (1940)	19	1	5.3	
Taylor (1920)	68	12	17.6	
Erdman, S. (1923)	25	7	28.0	
	112	20	Av.: 17.8	

Ferguson Operation

Ferguson's operation is essentially the same as Halsted's except that he omits the suturing of the cremasteric fascia under the internal oblique and the imbrication of the external oblique (Fig. 4).

Bloodgood

Bloodgood made an incision along the lower border of the rectus muscle and brought the rectus, the internal oblique and transversus abdominis

muscles down to Poupart's ligament (Fig. 5). In 1903, Bloodgood and Halsted introduced a rectus flap repair for direct hernia. The recurrence rate with the first procedure is too high to warrant its use, as indicated in Table IV.

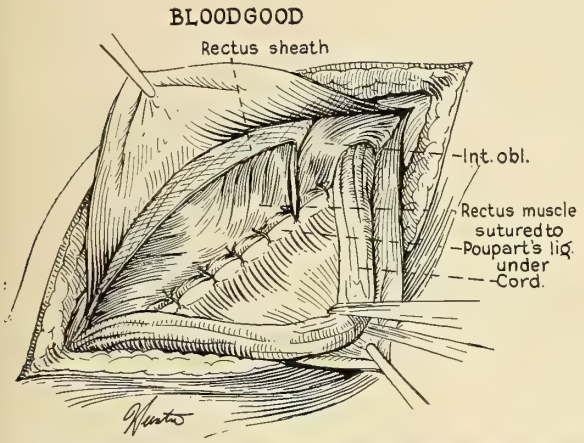


Fig. 5. Bloodgood operation. The rectus muscle and sheath are sutured to Poupart's ligament under the cord.

TABLE IV. RECURRENCE RATE—BLOODGOOD RECTUS MUSCLE

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Indirect Inguinal Hernia			
Shelley (1940)	40	7	17.5	
Taylor (1920	22	9	40.9	
	62	16	Av.: 26.0	
	Direct Hernia			
Shelley (1940)	97	25	25.8	

The rectus fascia used in a similar manner produced infinitely better results (Table V).

TABLE V. RECURRENCE RATE—BLOODGOOD-HALSTED RECTUS FLAP

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Indirect Inguinal Hernia			
Taylor (1920)	13	0	0	
Estes (1941)	271	1	0.4	Up to 14 mos.
	284	1	Av.: 0.25	
	Direct Hernia			
Estes (1941)	72	2	2.77	

Mattson-Bloodgood-McVay

Dr. Hamlin Mattson of Minneapolis, while in the service with the armed forces in 1943, devised a technique for hernia repair which he recommends when the transversalis fascia and conjoined tendon prove inadequate for repair. He swung a rectus and pyramidalis flap down to Cooper's ligament to fill in the floor of Hesselbach's triangle (Fig. 6). He repaired 24 difficult direct and recurrent hernias by this method. It may eventually prove that this procedure will combine the favorable end results of each of these.

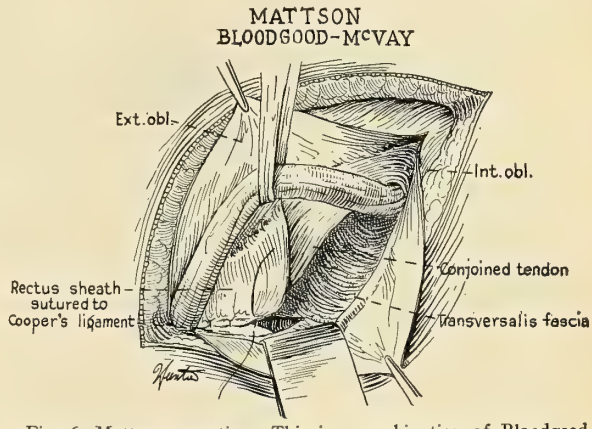


Fig. 6. Mattson operation. This is a combination of Bloodgood and McVay procedures in which the rectus fascia is sutured to Poupart's ligament under the cord. It essentially blocks an approach to the floor of the canal.

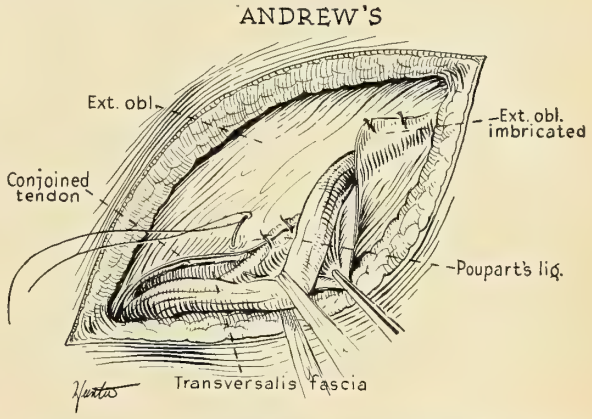


Fig. 7. Andrews operation. The external oblique fascia and conjoined tendon are sutured to Poupart's ligament under the cord. The cord is placed between the imbricated outer leaf of the fascia of the external oblique.

E. Wyllys Andrews

Andrews brought the upper flap of the external oblique aponeurosis and the internal oblique muscle together down to Poupart's ligament. He placed the cord upon these structures and swung the lower flap of the external oblique over the cord, leaving the cord between the imbricated flaps (Fig 7).

TABLE VI. RECURRENCE RATE—E. WYLLYS ANDREWS

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Shelley (1940)	50	4	8.0	
Joyce (1940)	544	16	2.9	0 to 4 yrs.
	594	20	Av.: 3.3	

Joyce reported very good results with the Andrews imbrication using the McArthur fascial strip as suture material.

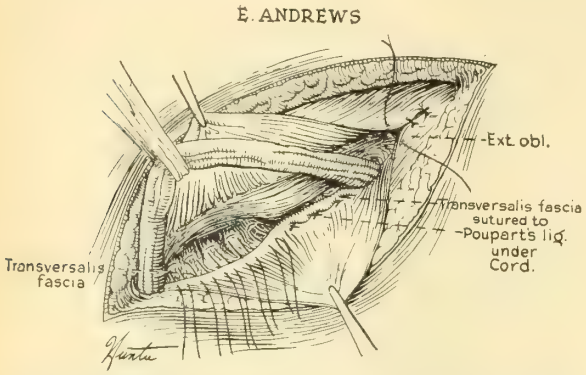


Fig. 8. Edmund Andrews operation. This consists of a tucking of the transversalis fascia and suturing it to Poupart's ligament under the cord.

Edmund Andrews

In 1924, Edmund Andrews stressed the utilization of only "white fascia" in the repair of hernia. He separated the transversalis fascia from the internal oblique muscle and sutured a pleat of fascia alone to the shelving portion of Poupart's ligament (Fig. 8). He also imbricated the external oblique. Only one reliable follow-up study with this type of repair has been found in the literature (Table VII).

TABLE VII. RECURRENCE RATE—EDMUND ANDREWS

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Burton & Ramos (1940)	457	34	7.5	3 yrs.
	Recurrent Inguinal Hernia			
Burton & Ramos (1940)	64	9	14.0	

Wangensteen

Wangensteen has used a pedicle flap of the iliotibial tract by swinging the latter over the inguinal ligament and filling the defect with fascia lata. Burton has modified the technique by bringing the flap through the femoral canal. This procedure is usually reserved for the more difficult hernias in which there is a large defect to be repaired.

TABLE VIII. RECURRENCE RATE—WANGENSTEEN

	No.	Recurrence	Per Cent Recurrence	Follow-up
Burton & Ramos (1940)	8	1	12.6	
Wangensteen (1934)	14	1	7.3	
Garner (1947)	6	0	0	1 yr.-10 yrs.
	28	2	Av.: 7.3	

McVay

McVay has popularized the use of Cooper's ligament as the anchoring point instead of Poupart's ligament in the repair of inguinal hernia (Fig. 9). Cooper's ligament had been used by Lotheissen in 1898, Babcock in 1927, Dickson in 1936, and others, but chiefly for femoral hernia repair alone. McVay uses a Rienhoff relaxing incision routinely in his repair. The available reports dealing with the end results from McVay's operation are very favorable (Table IX). Since the conventional procedures up to date have been only reasonably satisfactory, his technique deserves further trial and evaluation in the hope that greater assurance can be promised in the repair of hernia.

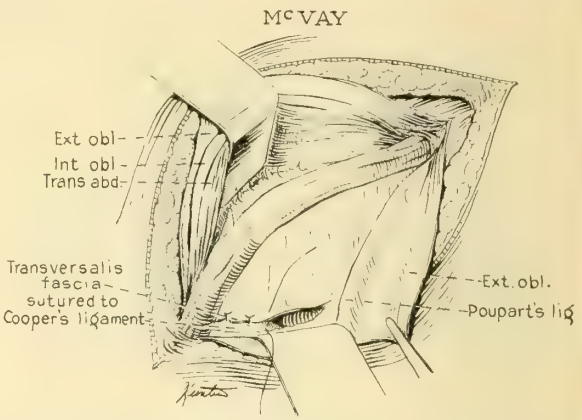


Fig. 9. McVay operation. The transversalis fascia is sutured to Cooper's ligament, thus blocking an approach to the floor of the canal.

TABLE IX. RECURRENCE RATE—MC VAY

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Harkins & Swenson 1943	112	1	0.9	⅔ less than 2 yrs. ⅓ over 2 yrs.
Garner (1947)	103	2	2.0	
Clark & Hashimoto (1947)	162	0	0.0	Up to 3 yrs.
	504	4	Ave.: 0.8	

McArthur and Gallie Fascial Strips

McArthur introduced the use of attached fascial strips from the external oblique aponeurosis as far back as 1901. However, the technique has not been widely used until the last ten to fifteen years. In 1921, Gallie found, after a thorough investigation with laboratory animals, that fascial grafts would remain viable if sutured

without tension. On the basis of that work, he used strips of fascia lata to repair inguinal hernia. One would assume that the McArthur fascial strip is more suitable than the Gallie strip, because the former is more readily available, and possibly more viable, since it is left attached. After comparing the recurrence rates of the two methods, we found the Gallie to be more satisfactory than the McArthur (Tables X and XI). However, it is a small series and no final conclusions can be made.

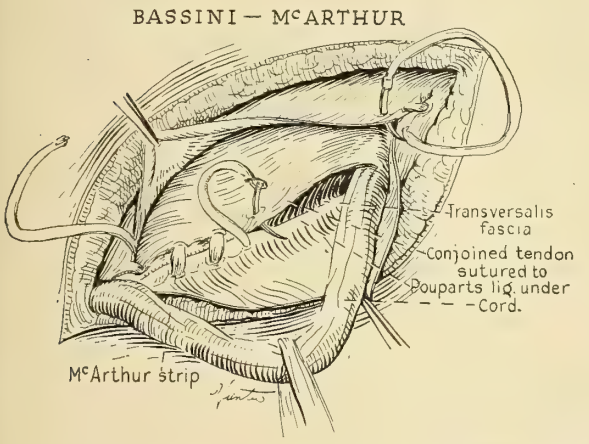


Fig. 10. Bassini-McArthur operation. McArthur recommended the use of locally available fascial strips and suggested that these could be used with any of the types of procedures. This illustration shows a Bassini type of closure in which the conjoined tendon is sutured to Poupart's ligament under the cord. The remaining strips merely close the fascia of the external oblique over the cord.

TABLE X. RECURRENCE RATE—GALLIE

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Garner (1947)	388	7	1.8	
Shelley (1940)	7	1	14.4	
	395	8	Av.: 2.2	
	Recurrent Inguinal Hernia			
Garner (1947)	94	7	7.4	
Shelley (1940)	51	5	10.0	
	145	12	Av.: 8.3	

TABLE XI. RECURRENCE RATE—MC ARTHUR

	No.	Recurrence	Per Cent Recurrence	Follow-up
	Primary Inguinal Hernia			
Garner (1947)	139	12	9.0	
Shelley (1940)	421	34	8.1	
	560	46	Av.: 8.2	
	Recurrent Inguinal Hernia			
Garner (1947)	2	1	50.0	
Shelley (1940)	27	3	11.0	
	29	4	Av.: 10.0	

McArthur-Bassini-McVay

At St. Barnabas Hospital, we have been using a three-strip Bassini-McArthur (Fig. 10) or McArthur-Bassini-McVay procedure. The three strips are made from the upper flap of the external oblique; two are left attached at the pubic spine and one at the muscle end of the external oblique. The first strip is used to bring the internal oblique muscle snugly around the cord at the internal ring and to the inguinal ligament (Fig. 10). The remaining two strips close thereby re-establishing the inguinal canal. The end of the fascial strips are secured with fine wire. The advantage of this technique is that it eliminates all foreign suture material except a very small amount of wire, which produces little tissue reaction. Recently, we have modified this operation by suturing the transversalis fascia alone to Cooper's ligament without including the internal oblique and transversus abdominis muscle in this portion of the stitch (Fig. 11). We think that this operation provides double protection against protrusion of a hernia through the floor of the canal: first, by blocking the approach to the floor of the canal as the transversalis fascia is sutured to Cooper's ligament, and second, by reinforcing the floor of the canal as the edge of the conjoined tendon (internal oblique and transversus muscles) is approximated to Poupart's ligament.

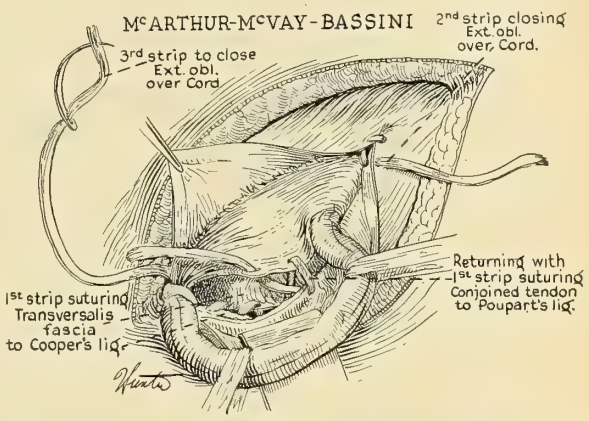


Fig. 11. McArthur-McVay-Bassini operation. Following the first strip, it will be observed that the transversalis fascia is sutured to Cooper's ligament, thus blocking the approach to the floor of the canal. The first strip continues back, approximating the conjoined tendon to Poupart's ligament, thus reinforcing the floor of the canal. The second and third strips are used merely to close the fascia of the external oblique over the cord, re-establishing the normal anatomical relationship of cord and inguinal canal.

An attempt was made to follow the hernia cases

in which this repair was used. One hundred and thirty-seven letters were sent out and there were 86 replies. We were able to examine only a small number of the patients. Several of the patients who stated they had a recurrence were mistaken, and one can safely assume that there were recurrences among the group who reported a good result. We therefore did not determine any recurrence rate, feeling that a follow-up by letter would not be sufficiently accurate.

TABLE XII.

	SILK			CHROMIC CATGUT		
	No.	Recurrence	Per Cent Recurrence	No.	Recurrence	Per Cent Recurrence
Parsons (1937)	458	37	8.0	244	49	20.0
Garner (1947)	1,370	97	7.0	274	28	10.0
Longacre (1939)	496	17	3.4	270	34	12.5
Hawks-French (1943)	143	8	5.6	349	42	12.0
	2,467	159	Av.: 6.4	1,137	153	Av.: 13.5

TABLE XIII. POUPART'S LIGAMENT

	SILK			FASCIA		
	No.	Recurrence	Per Cent Recurrence	No.	Recurrence	Per Cent Recurrence
Indirect Hernia						
Garner (1947)	327	23	7.0			
Longacre (1939)	278	5	2.1	Shelley (1940)	274	19	6.9
Hawks-French (1943)	110	4	3.6	Joyce (1940)	544	16	2.9
				Garner (1947)	91	4	4.4
	715	32	Av: 4.5		909	39	Av.: 3.3
Direct and Bilocular Hernia						
Garner (1947)	970	63	6.5			
Hawks-French (1943)	25	2	8.0	Garner (1947)	436	15	3.4
				Shelley (1940	154	16	10.4
	995	65	Av.: 6.5		590	31	Av. 5.2
Recurrent Hernia						
Garner (1947)	77	9	13.0	Garner (1947)	96	8	8.3

TABLE XIV. COOPER'S LIGAMENT

	SILK			FASCIA		
	No.	Recurrence	Per Cent Recurrence	No.	Recurrence	Per Cent Recurrence
Primary Hernia						
Garner (1947)	35	0	0	Garner (1947)	26	0	0
Harkins-Swenson (1943)	112	1	0.9				
	147	1	Av. 0.7		26	0	0
Recurrent Hernia						
Garner (1947)	13	1	7.7	Garner (1947)	15	1	6.6

Comparison of Chromic Catgut and Silk

Most surgeons agree that silk, cotton, and linen are more suitable than chromic catgut in hernia repair. There are skeptics, however, who argue that the suture material used does not effect the recurrence rates. Table XII should remove any doubt as to the value of nonabsorbable over the absorbable suture.

Comparison of Silk and Fascia

Some authors compare fascia to nonfascia, but the latter includes both chromic catgut and silk which should not be included together, as shown above. A more significant comparison would be between nonabsorbable suture and fascia, particularly to decide if fascia should replace nonabsorbable suture material in the simple hernia. The results in Tables XIII and XIV show almost identical recurrence rates.

Type of Recurrence

A large majority of recurrent indirect and direct hernias operated upon are found to be direct, a small number indirect, and very few femoral. One might argue that since so few hernias recur as femoral hernias, it should not be necessary to use a McVay procedure. However, on the basis of the figures in Table XIII and

XIV, it appears that the use of Cooper's ligament gives a smaller recurrence rate than was obtained by using the inguinal ligament.

When hernia recurs, most of them return as direct hernias as indicated in the following tabulations:

Burton and Ramos (1940)

130 Recurrences

Direct	71
Indirect	10
Bilocular	27
Trilocular	1
Femoral	0
Others	21

Shelley (1940)

	Recurrence	
	Indirect	Direct
95 Indirect Hernias	10	85
115 Direct Hernias	8	107

Recurrence Rates Among Operators

Interns and residents have higher recurrence rates than the staff. Proceeding from the more experienced to the less experienced, they vary from none to 24.1 per cent (Taylor) and 0.8, 3.9 and 6.7 per cent (Joyce). Therefore, only the cases of the experienced surgeons should be used in a report if a new technique is to be evaluated accurately.

Method of Follow-up

Taylor showed the importance of following cases by personal examination rather than by letter from the patient or another physician (Table XVI).

TABLE XVI.

	INDIRECT			DIRECT		
	No.	Recurrence	Per Cent Recurrence	No.	Recurrence	Per Cent Recurrence
Patients examined at Johns Hopkins	356	30	8.4	47	14	29.7
Patients checked by letter	460	16	3.4	47	3	6.3
	816	46	Av. 5.6	94	17	Av.: 18.08

Hernia in the Young and Aged

Coley repaired 4,807 hernias in children, with only nineteen recurrences, or a 0.39 per cent recurrence rate. Frequently, the only repair necessary is simple high ligation of the sac or a Ferguson operation. Grace, Dubin, and Murray on the other hand report over a 20 per cent recurrence rate for the aged. Shelley showed that the recurrence rates of indirect hernia increase with age as follows:

0-20 yrs.	1.3%
20-40 yrs.	6.9%
40-60 yrs.	9.2%
60-80 yrs.	20.0%

The transversalis fascia is often thinned and weakened in elderly patients.

Time of Recurrence

The time of recurrence varies in the literature. Probably a majority of recurrences are within the first two years, but if an operator's recurrence ratio is to be accurate, his course should be followed at least three years, preferably five (Table XV).

TABLE XV.

	Less 6 mo.	Less 1 yr.	Less 2 yrs.	Over 2 yrs.	Over 3 yrs.
Burdich (1937)			60.0%	40.0%	
Judd (1908)	70.0%	90.0%			
Erdman (1923)		73.9%	98.6%		
Longacre (1939)		72.0%	87.2%		
Shelley (1940)			66.6%		25.0%

The studies made at St. Barnabas Hospital reveal that letters from the patient were not reliable. Many studies gleaned from the medical literature were not included in this paper because the cases were followed by letter or over too short a period of time. Those followed by letter have very low recurrence rates: some less than 1 per cent in large series.

Conclusion

1. The Bassini and the Halsted II operations have about the same recurrence rates, 5 to 6 per cent in indirect, and 15 to 18 per cent in direct hernias. These operations reinforce the floor of the inguinal canal.

2. The Halsted I and Bloodgood (rectus muscle) operations have such a high recurrence rate as to make these operations undesirable. The rectus fascia flap repair, however, gives good results.

3. Wangensteen's pedicle flap is an excellent repair for more difficult hernias.

4. Cooper's ligament repair gives lower recurrence rates in primary inguinal hernia than other procedures. This operation blocks an approach to the floor of the inguinal canal.

5. Silk, linen or cotton are definitely better suture materials than chromic catgut in hernia repair.

6. Silk and fascia, when used as suture ma-

terial, give about the same recurrence rates in primary inguinal hernia repair.

7. Most hernias recur as direct hernias through the floor of the inguinal canal.

8. A barrier against an approach to the floor of the canal (McVay), in addition to a reinforcement of the floor of the canal (Bassini), held permanently with suture material (McArthur fascial strip) appears to offer, on the basis of statistical analysis, advantages from each of these fundamental principles which have been evolved for the cure of hernia (Fig. 11).

9. Recurrence rates increase with age.

10. If recurrence rates are to be accurate, cases should be followed at least three years, preferably five.

11. Follow-up by letter is inaccurate.

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LABORATORY FINDS RARE DISEASE

Two cases of sporotrichosis, a fungous disease very rare in Minnesota, were reported recently by the Medical Laboratories of the Minnesota Department of Health. Only one case had previously been reported to the Health Department as far back as 1932.

The disease is a chronic infection characterized by the development in the lymph nodes, skin, or subcutaneous tissues of nodular lesions which break down to form indolent ulcers. Evidence suggests that the infection is acquired from contact with plants, but it may also come from contact with infected animals. The fungus usually finds entry through the skin. The first lesion may appear from 20 days to three months after inoculation. The first evidence of the infection is the appearance of a hard, spherical, non-tender nodule. As the disease progresses, subcutaneous nodules appear along the lymphatics draining the area.

One of the recent cases in Minnesota, occurring in a St. Louis County man, apparently came from pricking his finger on a thorn while planting rose bushes last fall. This case was identified by the laboratory of St. Luke's Hospital, Duluth, and the identification corroborated by the Health Department. The other case, that of a woman in Brown County, started with an ulcer just above the elbow, and had no history of previous injury.

Fortunately, treatment with potassium iodide is practically a specific in the treatment of sporotrichosis, if given in adequate, rapidly increasing doses—*Minnesota's Health,* April, 1948.

HEMOSTASIS IN TONSILLECTOMY

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THIS article is written not in the belief that I am offering anything new in the technical field, but rather with the idea in mind that medical literature dwells neither long enough nor exactly enough on the important detail of hemostasis in tonsillectomy, thereby failing to impart much needed information to the general practitioner. The article is written also, therefore, in the hope that it will curtail the years of experience in general practice necessary to obtain the knowledge which a single article could have properly presented.

My desire is not to discuss the technique of tonsillectomies, except to note a few facts pertinent to the later development of my ideas on the treatment of postoperative hemorrhage. I believe that in shaving or snipping the tonsil capsule from its bed, care should be exercised to hug the tonsil, and also that a greater tension should be put on the tonsil with only a reasonable and much less pressure on the dissecting knife. Furthermore, the closer the lower pole is approached before snaring, the less hemorrhage may be expected, if the dissection is deftly performed. In most cases, it should be possible to shave out the tonsil completely, snaring merely mucous membrane.

Whatever technique is used, I feel that descriptive emphasis is wrongly placed on the procedure of enucleation, rather than on hemostasis. This latter, if we are to judge by the bulk of literature, is treated too lightly and as a secondary matter. Instead of meticulous ligation of bleeders, dependency is placed on pressure, use of icebags, pillar suturing, application of silver nitrate, Monsell's solution, thrombin, serum, novocaine and adrenalin injection at the point of bleeding, et cetera. All of these seemingly ignore the fact that in any other surgical procedure, in attempting to affect hemostasis, recourse is had only to ligation with no thought of employing doubtfully effective methods such as those above mentioned.

Field

The exposed surface following tonsillectomy presents itself as an anterior and posterior wall, meeting at a central perpendicular line. This is true only insofar as the area is left unmolested. Active tension on either the anterior or, especially, the posterior pillar, produces a flat surface, the trough being reduced.

The inferior "angle," from which has been removed the lower pole of the tonsil, appears as a well-like cavity. In this case, too, traction upward on either or both pillars near their inferior extremities elevates and obliterates the cavity. This may be accomplished, also, by grasping the bed (without clamping) in the vicinity of the lower pole raw area and exerting traction.

The area which previous to enucleation contained the superior pole of the tonsil is an actual cavity. It is usually more difficult to produce a clearly visible area at that point. However, here too, full vision of the entire surface may be obtained by traction distalward with concomitant upward traction by a pillar retractor on the hood of the cavity.

Thus, with good light, there should be reasonable assurance of full visualization of every recess of the exposed tonsillar bed.

Vessels

Either venous or arterial bleeding or both may issue from the upper pole area.

In the central area, unless the operation has been quite roughly done, the bleeding usually is only from a punctured or torn central vein, coursing vertically. Rarely is there a plexus of veins. In all cases the blood may be seen issuing from the particular point of injury to the vein.

As the lower pole is approached, on the inferior central surface, and usually on the "anterior" wall, there is present quite commonly an arterial hemorrhage, occasionally productive of a freely spurting issue.

The lower pole area may be the site of either arterial or venous bleeding or both. It is especially noticeable here, however, that bleeding is seldom brisk and soon ceases spontaneously. It is quite important to bear this in mind, as rapid filling of this area will frequently prove, when it is reduced by tension, to be the result of gravitation of blood from a superior area—this regardless of a low head positon.

There is no bleeder, in my experience, which cannot be fully visualized, if care is used.

In a tonsillectomy done under general anesthesia, if a bleeder is found in a particular location



Fig. 1. The La Force "Y" tier with rounded notch.

in one tonsil bed, a bleeder can be expected to be present in the corresponding location in the opposite tonsil bed. This anticipation is a valuable time-saver in seeking for bleeding points.

The "fire hose" type of bleeder is hardly as frightful or profuse a condition as the name seems to imply. Rather, it is a bleeder whose actions resemble those of an uncontrolled fire hose—a waving, curling action. The result is that, following sponging and ascertaining the position of the bleeder, a forceps applied at that point fails to cause hemostasis; or before clamping is attempted, it is realized the bleeder is no longer at that point. If the mechanics of the difficulty is not realized by the surgeon, he will eventually begin to clamp indiscriminately, grasping large areas of tissue and doing real harm. Good light and care will result in visualization of the vessel, which may be clamped above the elusive bleeding point. Pinhole or tear hemorrhages of veins are clamped at the bleeding point, with no more than the vein being caught in the grasp.

I have never encountered a general oozing. I feel that those in a state of hemorrhagic diathesis should be left unoperated upon. I believe that most of the "bleeding" cases are excuses for unskillful surgery or lack of meticulous care in ligation, the operator depending, rather, on ineffective, ill-chosen or antiquated methods because he considers the location and ligation of bleeding points an extraordinary procedure.

Instruments

For many years I have used satisfactorily a Wolf mouth gag with a self-retained tongue depressor. This mouth gag or any other of comparable design produces a field easily illuminated and completely envisioned.

Rochester-Pean's curved forceps are advisable, smaller forceps being impractical and difficult to manipulate.

The La Force "Y" tier, as illustrated in Figure 1, has been used by me for many years with complete satisfaction. It can be purchased from any of the surgical houses. It is important to note that the guide slots converge to a sharp angle. This angle should be rounded with a rat-tail metal file, so that during tension the instrument will exert no grip on the suture material, but rather will afford a smooth surface. Silk or cotton sutures are difficult to use; 00 catgut works well. In my experience, any type of trick tying forceps is cumbersome and impractical.

Following the original sponge pressure, small sponges, one-fourth the usual size, are used in seeking bleeders.

Technique

On several occasions I have practiced grasping bleeders as they became evident during enucleation. However, during the dissection there is free hemorrhage from the tonsil just as from the bed, resulting, in my experience, in difficulty in identifying bleeding points, thereby prolonging the operation. Furthermore, it is obvious that at this stage of the procedure, no effort can be made to tie without encountering many difficulties. The result of this technique, therefore, is that upon completion of enucleation of the tonsil, there will be many unnecessary hemostats in the field, most of them, incidentally, grasping excessive tissue.

It is most important that a grasp inclusive of any excess tissue be avoided. Not only is this destructive to muscle tissue, but also could be a direct cause of delayed hemorrhage due to slough.

Grasping excess tissue results in difficulty or failure to ligate securely. Furthermore, it is absolutely unnecessary, no matter how profuse the bleeding from a particular point. The intention of the operator should be to grasp and ligate only the involved vessel.

As the large sponge is slowly removed from the upper pole area, each bleeding point is clamped. This is at times awkward. Therefore, if proper suction facilities are to be had, the large sponge may be removed, and the operator

may resort to seeking with the smaller sponges and suction tip.

The pillar retractor is probably more valuable in depressing the posterior than in elevating the anterior pillar. If this is difficult, an intestinal Allys forceps may be used in drawing down the posterior pillar. Seemingly inaccessible areas are easily brought into view by grasping with the Pean forceps an adjacent area and drawing the bleeding field into view. If this is forgotten, what should be an easily remedied situation results in a seemingly hopeless problem.



Fig. 2. The knot approaches the point of the forceps. The forceps is rotated to face the approaching knot. The method of forcing the knot with one hand is unworkable.

If several hemorrhaging points are present, sponge pressure may be used to control them while each is tied. However, this is an extreme condition. I have never found it necessary to ligate more than five bleeders on a side. Usually they number two, rarely three. In all cases, the "terrific" bleeding from a tonsil bed, on careful inspection, manifests its origin as a single bleeding point.

Never have I found any suturing necessary. That should be properly relegated to the realm of bygone surgery. Except in inexcusable operations or in cases of hemorrhagic diathesis, the suturing of pillar over gauze is little less than an expression of ignorance of the principles of hemostasis. (I am referring to any hemorrhage within the eighteen-hour postoperative period.)

Ligating is comparatively simple but is subject to little difficulties which, if unsuspected, result in insecure ties. The difficulties, as illustrated, are:

1. Failure to slip the loop over the tip of the forceps. This is overcome by having the tip facing the approaching knot (Fig. 2).

2. One arm of the tier may be on the leader while the other is within the loop, resulting, surely, in a loose tie (Fig. 3).

3. Complete rotation of the forceps may be necessary to bring the tip in view out from under the hood or anterior pillar.



Fig. 3. Cause of a loose tie—one arm on the leader and one in the loop.

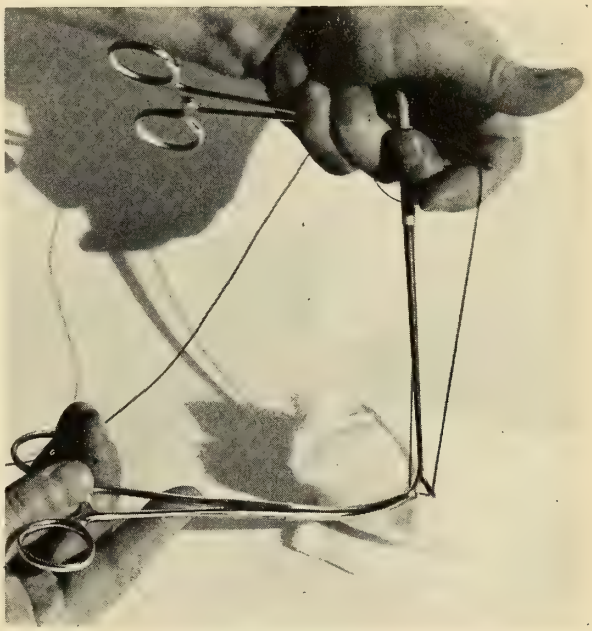


Fig. 4. One-hand tying after the knot is formed.

4. It is customary for an assistant to hold the hemostat during the placing of the ligature. However, at times there is such difficulty in manipulation that the surgeon himself must guide the point of the forceps with his right hand. In such cases the leaders of the ligature above the descending knot are clamped. Then, with the left hand grasping this clamp, and the finger

placed between the strands, the palm of that same hand presses down on the tier, simply completing the one-hand tie (Fig. 4).

Bleeders on the pillars must be handled quite delicately or muscle destruction will result. Need of hemostasis in these areas is rare in my experience.

After all ties are placed, a gentle roughening of the surface with a sponge is practiced in order to insure discovery of bleeders likely to open several hours later. This procedure brings to light potential postoperative hemorrhage often enough, I believe, to justify itself.

The use of the "Y" tier is easily adapted to local anesthesia tonsillectomies and may be applied during the first eighteen hours of the postoperative period.

Results

During the period covered by this study 200 tonsillectomies were performed under general anesthesia and 150 under local anesthesia.

In the group of 150 local anesthesia tonsillectomies there were two postoperative hemorrhages. One was due to a tie that had slipped in a patient, A. J. Fourteen hours postoperatively, the point was easily religated at the bedside, employing the usual technique. The second case was in a patient, G. P. No ties had been found necessary during the operation, the patient leaving the operating room with a dry field. Moderate bleeding appeared twelve hours later which required ligation at the bedside.

The occurrence of a single frank hemorrhage in this local anesthesia group shows the importance of the proper application of a tie. The other hemorrhage suggests the importance of extreme care in ligating small bleeders after tonsillectomy under local anesthesia, inasmuch as following disappearance of the edema of infiltration and loss of the adrenalin effect seemingly insignificant hemorrhages might become profuse.

In the group operated upon under general anesthesia, one hemorrhage in a patient, D. M., a child of six years, became apparent forty-eight hours following operation, but was moderate and ceased spontaneously. There were two other hemorrhages in this group, each occurring in a brother and sister operated on the same morning, but not occurring until eight days postoperatively. Each was controlled by pressure applied for eight hours, and was located in the lower pole where no ligatures had been applied. From observation of these two cases and of cases of delayed hemorrhage occurring in patients in charge of other physicians, I am inclined to the belief that delayed postoperative hemorrhage is not due to slough of tissue, but rather to a length of vessel detached from the bed, which not having been ligated sheds its clot and reopens at a later date.

It is to be noted that the formation of a postoperative clot denotes hemorrhage. Except for the three cases in which bleeding might have ceased spontaneously, there were no clots formed in the tonsillar beds. Postoperatively the presence of large clots adds to the pain.

Conclusions

1. Exposure of the raw tonsil bed following tonsillectomy is easily accomplished and necessary for proper hemostasis.

2. As in other surgery, meticulous ligation of bleeding vessels, without inclusion of excess tissue, results in absolute control of postoperative hemorrhage.

3. In 350 cases of tonsillectomy there were three immediate hemorrhages of little consequence and two hemorrhages occurring eight days postoperatively, all other cases presenting fresh beds free of clots.

4. A method has been presented of executing these procedures, the results of which seem to prove its worth.

MEDICINE IN THE CHANGING ORDER

The unsolved problems of public health and preventive medicine lie in the field of health protection and health promotion of the adult, particularly the young adult, who is the most productive member of society. It is also quite clear that problems of adult hygiene cannot be solved by the methods of mass approach.—Report, New York Academy Med. Comm., The Commonwealth Fund, 1947.

CERTAIN FACTORS INFLUENCING SURVIVAL AND DEATH IN CORONARY ARTERY DISEASE

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WITHIN the last decade and a half, a change occurred in the medical concept regarding the prognosis in coronary artery disease. The previously existent pessimism has been supplanted by a greater tone of optimism. This has been brought about by several attainments. More accurate and comprehensive studies of large groups of patients over long periods have yielded statistical information which has favorably modified the data elicited from previous limited investigations conducted over short periods. These short-term studies failed to reveal the true over-all picture, because the mortality rate of coronary artery disease is at its peak during the first year following the onset of symptoms. While the death rate successively continues, it does so in a gradual and less impressive manner. Thus, a study of a limited number of patients over a period of five years will obviously present a much higher relative mortality rate than a study of a large group of patients over a period of twenty-five years or more. Furthermore, greater diagnostic accuracy, the earlier positive recognition of the disease, and its more prompt and effective management have all been factors in the more favorable prognosis. It therefore seems appropriate to undertake an appraisal of the known factors which influence both survival and death in this remarkably common form of heart disease.

Coronary artery disease adapts itself to classification in two main categories: (1) transient recurrent episodes of coronary insufficiency, named angina pectoris by Heberden in 1772, and (2) sudden occlusion of one or more coronary arterial tributaries by thrombosis with or without acute infarction of the myocardium. The patients in either category may have the complicating effects of significant hypertension or associated cardiac defects.

Remarks on the Genesis of Coronary Artery Disease

While the exact genesis of arteriosclerosis and atherosclerosis is not known, certain pertinent speculations from observation and experience are justified. It has long been known that arteries or arterial junctions which normally are subjected to unusual stress and strain are favorite sites for the development of these changes. This is particularly true of the coronary arteries, and especially of the coronary tributaries which supply the left ventricle. Owing to the massive musculature of the left ventricle, the branches are deeply penetrating and they issue from the main artery at right angles, an arrangement which rhythmically, with the beat of the heart, permits buckling of the vessel to occur and renders these junctions susceptible to great and recurrent strain. Opposed to this status are the coronary tributaries which supply the right ventricle. The musculature of this chamber is less massive, the vessels are smaller and more superficial, do not penetrate the muscle mass at right angles, and are therefore not subjected to the same degree of strain as are those of the left ventricle. These observations are in harmony with postmortem findings.

From almost the beginning of medicine, atherosclerosis and arteriosclerosis have been accepted as concomitants of the process of aging. In so far as the venerable years of life are concerned, this may be true, but in the younger age groups another answer must be sought. Various investigations during recent years have shown that many patients with coronary artery disease, and with arteriosclerosis obliterans of the extremities, have associated hyperlipemia with or without lipoid deposits in the skin (xanthelasma). In this connection, the studies of Leary have been both interesting and important. He suggested that atherosclerosis represents a disturbance of the lipoid metabolism of the body and that thus, instead of being a normal aging process, it belongs to the category of metabolic diseases wherein animal fats are not properly utilized and excessive quantities of the lipoids are present in the blood and tissues of individuals, in a similar manner to the failure of carbohydrate metabolism in diabetes mellitus and failure of purine metabolism in gout.

Leary and others recognize three basic arterial lesions. The first is atheroma, which is a rever-

From the Section on Cardiology, Mayo Clinic, Rochester, Minnesota.
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sible process in youth, in which cholesterol esters appear in foam cells in the subendothelial layer of the intima, as in atherosclerosis. Excess cholesterol is removed by cells which have the general character of fibroblasts. In these cells, the esters are split, the excess cholesterol becomes dissolved and disappears, and excessive cholesterol does not remain sufficiently long to be an irritant and thus bring about true atherosclerosis. As the body ages, the power to remove excess cholesterol from the arteries apparently becomes lost. The second type of lesion is atherosclerosis, which is a progressive process in which the foam cells persist for long periods, and the excess cholesterol is retained, acts as an irritant and stimulates the growth of connective tissue. The third type is arteriosclerosis, which is the ultimate calcification of the already existing arterial lesions.

Cholesterol is a lipoid found in nature only in animal bodies and their products. It is a basic substance of every animal cell, and the human supply is derived solely by ingestion. It is not synthesized in carnivorous animals or man. It is probable that herbivora synthesize cholesterol from the closely related phytosterols, which have the same chemical formula as cholesterol but with a different molecular arrangement. Cholesterol occurs in both a visible (polariscopic) form and a combined nonvisible form. It has been shown that visible cholesterol normally occurs in the adrenal cortex, myelin sheaths, interstitial cells of the testicle and, at times, in corpora lutea. Otherwise, visible cholesterol appears always to be associated with disease. It is a chronic irritant and, like other foreign substances, tends to stimulate the growth of connective tissue.

Man is the only known creature who, from soon after birth to old age, partakes of a relatively high animal fat diet. Furthermore, man is the only known creature that dies relatively young from coronary disease and, as he attains advanced periods of life, universally exhibits arteriosclerosis. Also atherosclerosis has repeatedly been produced experimentally in herbivora by the feeding of rich cholesterol diets.

Difficulty has been encountered in explaining the sex discrepancy in coronary artery disease. There is a ratio of nearly 5:1, the disease being remarkably more common among men than among women, and when coronary artery disease does develop among women, it is usually later in life than among men. This fact cannot be explained on an anatomic or general physiologic basis, nor on the basis of occupational differences or other environmental factors. There is, in reality, only one fundamental functional difference between men and women, and that is woman's specific function of reproduction.[8]

It is a well-known fact that during pregnancy the lipoids of the tissues of the body increase markedly. This is without a doubt a physiologic response to assure adequate nutrition for the development of the fetus. However, when pregnancy has been resolved and the normal adjustments have been made, women in most instances are capable of mobilizing and utilizing this excess lipoid material and again assuming a condition of complete normality. Women are apparently possessed of a more perfect and active lipoid metabolism than men. When men once begin to accumulate lipoids in their tissues, the lipoids tend to remain there and frequently are deposited in the arterial intima.

In discussing the genesis of coronary artery disease, the influence of heredity cannot be avoided. It is a daily experience when one questions patients suffering from cardiovascular-renal disease that the development of various phases of this disease in successive generations of the family is not uncommon. There seems little doubt that a heredity of this type results in certain persons being born with relatively poor cardiovascular fabrics. Some of them, under more or less cloistered and protected conditions of life, may get along very well, but many others do not. The latter are at least candidates for coronary artery disease, hypertension or both.

In addition, the stresses and strains of modern life, which promote recurrent and finally sustained tension and often prevent adequate rest and relaxation, are undoubtedly important influences which favor the development of vasospasm in certain individuals. It is furthermore known that a complicating hypertension is capable of accelerating the progression of both the atherosclerotic and arteriosclerotic lesions.

Another factor which must be taken into account in this discussion is the question whether the use of tobacco accelerates the progression of coronary artery disease. There is an increasing tendency toward more widespread and excessive use of tobacco today. The general statement that the use of tobacco is injurious to all who practice the habit is, without a doubt, far from being

the truth. It, however, can be correctly stated that an appreciable group of individuals exist who do not tolerate tobacco well and among whom, under its continued and especially excessive use, episodes of vasospasm may occur.

In 1940, English, Berkson and I carried out a comprehensive statistical study regarding the use of tobacco in coronary artery disease. It is of interest to note that in the fifth decade of life, 79.7 per cent of the patients who had coronary artery disease were smokers and in the control series in which this disease was absent, 61.9 per cent were smokers. This is a discrepancy of approximately 18 per cent and is of significant statistical importance. Data of this nature obviously do not permit the conclusion that tobacco is a specific agent in the genesis of coronary artery disease, although the allegation cannot be denied that it may accelerate the arterial lesions in some persons, particularly when excessively used. It seems, therefore, that tobacco has its greatest injurious potentialities in the younger age groups. The effect of the degree of smoking was also investigated, and it became evident that the incidence of coronary artery disease increased with the degree of smoking.

Transient Recurrent Episodes of Coronary Insufficiency (Angina Pectoris)

It is desirable to analyze this group of patients first because they may be stated to represent the uncomplicated form of coronary artery disease. In many of them, sudden occlusion of a coronary arterial tributary has not occurred, although these individuals are perpetual candidates for this complication to happen at some time. It is a well-known fact that the coronary arteries of patients in this category are commonly obstructed or at least considerably narrowed by atherosclerosis or arteriosclerosis, but the obliterative process has occurred gradually rather than suddenly. The obliterative process commonly involves multiple tributaries.

This gradual narrowing and occluding process, usually extending over a period of several years, is the impetus for the development of collateral circulation, the basic mechanism whereby survival is possible. Most human hearts are provided with a variable abundance of small nonfunctional channels which become functional and intercommunicating when the demand is imposed. Collateral circulation may be well established and adequate by the time that complete closure of a coronary artery occurs but, more frequently, it is inadequate and incompletely established. This collateral circulation, bridging the gap of an occluded artery, is gradual in its development and may not reach its potential maximum for several years. In certain instances, its adequacy becomes so complete that with reasonable care the patient becomes free of symptoms. However, many other patients, by perpetually limiting excessive demands on the heart, may remain relatively free from symptoms even though the coronary circulation is limited.

The tendency exists for coronary atherosclerosis and arteriosclerosis to be a progressive process, although numerous instances occur in which the progression is gradual and at times favorably counteracted by the ultimate establishment of remarkably adequate collateral circulation. These are largely the patients who survive the disease beyond the critical first year period.

It is of great importance that the diagnosis of coronary artery disease be made promptly in order that a proper individualized regimen can be introduced immediately. I am convinced that the properly ordered regimen, when obeyed, is of paramount importance in the survival of many patients. Advice must center around modifications or prohibitions aimed at completely controlling the symptoms if possible. The advice naturally varies from patient to patient. Owing to the fact that the first year of the disease as evidenced by symptoms is so important, the immediate institution of the regimen should not be delayed. Temporary discontinuation of work in the form of a restful vacation at home should be insisted on whenever possible. It is almost the rule that the onset of symptoms coincides with bouts of unaccustomed activity, tension and fatigue. The patient must acquire a new philosophy of life, an accomplishment which rarely can be achieved in a short time. He must learn his physical tolerance, he must learn the art of relaxation, and, above all, learn to control his emotions more adequately. It is of great importance that the patient be instructed to modify his activities below his limit of accustomed tolerance during extremely hot weather, particularly when the humidity is high, during extremely cold weather and during periods when abrupt and great fluctuations of temperature occur. Each patient should be instructed regarding the use of nitrites and should always have the

drug on his person for immediate use if necessary. The obese patient should reduce his weight by careful dietary precautions, and the excessive smoker should either discontinue the use of tobacco or use it sparingly. Patients who have hyperlipemia should use animal fats very sparingly in their diets, but unfortunately this method is frequently not effective. The use of the xanthine derivatives, vitamin concentrates and countless other so-called modern agents has been quite ineffective and has certainly not modified the course of the disease. Mild sedation has a definite place in certain patients.

Sudden thrombotic occlusion of a coronary arterial tributary in this group of patients commonly eventuates in sudden or ultimate death. Here again, the time factor enters the problem significantly because, if enough time has elapsed from the onset of symptoms of coronary insufficiency to permit adequate collateral circulation to become established, a complication that otherwise would be fatal may prove to be only a temporarily disabling incident.

The problem of sudden death during transient episodes of coronary insufficiency, in the absence of thrombotic occlusion and acute myocardial infarction or without complete atheromatous or arteriosclerotic obliteration of a coronary arterial tributary, remains largely unanswered. It is, however, not improbable that sudden and somewhat prolonged periods of myocardial anoxia are capable of initiating marked and often fatal disturbances in the intrinsic mechanism of the heart, such as ventricular fibrillation, ventricular tachycardia, asystole and even profound and irreversible disturbances of conduction. The abrupt termination of life under such circumstances has not, except in rare instances, permitted physicians to suspect these events by means of auscultation or to prove their occurrence by graphic records.

Recurrent thrombotic occlusion of coronary arterial tributaries obviously reduces the chances of survival. Cardiac enlargement is also an unfavorable finding regardless of its cause. It may result from hypertension, from multiple healed or healing infarcts, or from associated unrelated cardiac lesions. One or more episodes of congestive failure or bouts of pulmonary edema are invariably of grave import and rarely coincide with even a limited expectation of life. The same is true of the so-called status anginosus, always an expression of extensive, severe and progressive involvement of the coronary arterial tree.

In the discussion relating to the unfavorable import of congestive heart failure, brief comment regarding the oft-neglected venous coronary circulation is appropriate. Katz and his associates studied the venous coronary circulation in 1938 and made important contributions. Their work indicated that an average of 92 per cent of the blood from the right circumflex artery drains into the right thebesian system, while the coronary sinus receives an average of only 1 per cent and the left thebesian system an average of 7 per cent of the blood. In the case of the left circumflex artery, the right thebesian system drains an average of 48 per cent of the blood, the coronary sinus an average of 38 per cent, and the left thebesian system, 14 per cent of the blood. The anterior descending branch of the left coronary artery drains an average of 51 per cent of its blood into the right thebesian system, an average of 42 per cent by way of the coronary sinus, and an average of 7 per cent into the left thebesian system. These studies show the importance of the right thebesian system as a drainage bed, even of the blood from the arteries of the left side of the heart. Thus, approximately two thirds of the total blood flowing through these three important coronary arteries drains into the right thebesian system and less than one third into the coronary sinus. It therefore becomes evident that interference with this important drainage bed, such as occurs in congestive heart failure when pressure within the right ventricle becomes significantly increased, immediately impairs the efficiency of the coronary arterial blood flow.

Finally, the absence of significant electrocardiographic alterations tends to indicate a more favorable prognosis than their presence indicates, although many exceptions to this statement have been observed. Approximately a third of patients with transient recurrent episodes of coronary insufficiency, who have escaped sudden thrombotic occlusion and in whom significant hypertension is absent, have essentially normal electrocardiograms. This finding, however, must never be interpreted as mitigating, in any sense of the word, the importance and potential seriousness of the disease. By the same token, abnormal electrocardiograms do not necessarily or always indicate a grave prognosis, although many physicians make such inferences on very flimsy and

speculative evidence. After all, the question of survival or death rests fundamentally on the functional adequacy of a structurally impaired coronary circulation.

Sudden Occlusion of One or More Coronary Arterial Tributaries by Thrombosis with or without Acute Infarction of the Myocardium

The abrupt occlusion of a coronary arterial tributary frequently occurs as the first manifestation of coronary artery disease. However, atherosclerotic or arteriosclerotic changes in one or more vessels have been present, but many times the coronary circulation has not been impaired to the degree where symptoms have occurred. Therefore, the event commonly occurs with dramatic suddenness, the pre-existing arterial lesion may comprise only a limited segment (the so-called plaque), and death may occur immediately or soon after the complete closure of the arterial tributary occurs. This is in part due to the fact that the preparatory mechanism instrumental in fostering the development of collateral circulation has been absent.

The most common basis for the abrupt closure of a coronary arterial tributary is thrombosis, usually occurring near or at the point of arterial narrowing and roughening. Less commonly, hemorrhagic lesions in the walls of the coronary arteries are the forerunners for abrupt vascular occlusion usually completed by regional thrombosis. In 1943, English and I reported our findings in 135 hearts secured at postmortem examination. Hemorrhagic lesions were discovered in the walls of the coronary arteries in 40 per cent of the specimens examined and were directly or indirectly related to abrupt closure of the vessel in 39 per cent of the hearts exhibiting such lesions. The lesions were characterized by hemorrhage, the presence of large lipoid-containing cells (foam cells), proliferative intimal changes and organization. Smaller and less active lesions were found adjacent to calcified plaques. The intimal changes which coexisted with the hemorrhage appeared to represent the primary factor in the process, while the hemorrhage was a secondary event.

Very rarely, coronary embolism from a more or less remote thrombotic focus is the basis for sudden coronary obstruction. This event most frequently occurs where the coronary arteries are relatively normal, most commonly from valvular vegetations or mural thrombi situated in the left chambers of the heart, and only rarely as a paradoxical embolism from some focus in the right chambers of the heart or in the venous system.

The myocardial response to abrupt coronary artery closure is usually acute infarction. However, under conditions of pre-existing symptoms of recurrent transient coronary insufficiency, particularly when they have existed for a considerable time and the patient has survived the critical period during which collateral circulation is being established, sudden thrombotic closure of a coronary tributary may not result in myocardial infarction. While this circumstance is relatively rare, its reality has been definitely established by careful postmortem study.

When the patient survives the immediate impact of sudden coronary occlusion, and certain complicating features, such as intraventricular mural thrombosis with embolic detachments, spontaneous rupture of the infarcted region, and profound disturbances of rhythm, do not occur, an excellent chance for survival is afforded. This statement is of course predicated on the supposition that prompt and adequate rest and treatment have been inaugurated.

The complete healing and cicatrization of an infarct cover approximately a period of three months although considerable repair usually is evident within a month. It is, therefore, of great importance that complete rest be enforced during the early phases of recovery. When the process of infarction is completed, which usually occurs within forty-eight to seventy-two hours, nature's first task is to remove the necrotic detritus, which is accomplished by phagocytosis. This process results in a variable degree of leukocytosis and acceleration of the sedimentation rate of the erythrocytes. Frequently, within twenty-four to forty-eight hours, an invasion of fibroblasts occurs, best seen at the margins of the infarct. This process represents the first stage of healing. A little later small blood vessels are observed accompanying the new fibroblastic growth. These new vessels obviously furnish a system of transportation and nutrition for the healing infarct. They are in no sense components of the functional collateral circulation, already discussed, but apparently serve only to promote healing of the infarcted region. In large infarcts, particularly where collateral circulation has not been established to a functional degree, and conditions of

potential healing are absent, interrupted or delayed, progressive necrosis of the infarcted region occurs with spontaneous rupture or aneurysmal dilatation of the affected portion of the left ventricle. The former complication usually terminates in sudden death, although a period of several hours from the time of perforation until dissolution has been observed. In the latter complication, death may occur suddenly or gradually. As previously stated, recurrent multiple infarcts obviously diminish the patient's chances for survival.

In the attempt to prevent the occurrence of mural intracardiac thrombosis in acute cardiac infarction and to prevent extension and recurrence of the intra-arterial thrombosis, the virtually routine employment of anticoagulants has been introduced. Usually the administration of heparin is recommended during the first twenty-four hours to achieve prompt action, with the simultaneous administration of dicumarol to effect sustained action after the discontinuance of administration of heparin. While the total experience gleaned by this method of treatment is still too limited to enable one to draw positive conclusions, the incidence, particularly of embolic phenomena, appears to have been significantly reduced. The use of anticoagulants in patients prior to acute coronary occlusion is as yet not to be advised because no comprehensive data exist to recommend it and, owing to the necessity of constant medical vigilance, it appears at this time to be impractical.

The location of the cardiac infarct, with the exception of quite extensive involvement of the interventricular septum, does not seem to influence survival or death materially. The size of the infarct does clearly affect the outcome.

In most human hearts the general scheme of the coronary arterial tree varies little with the exception of minor differences. However, from time to time, specimens are observed in which congenital anomalies of the coronary vessels have afforded the patient no chance whatsoever to survive, even temporarily, the sudden occlusion of a main arterial tributary. In this discussion I shall not consider those marked anomalies, frequently associated with other congenital cardiac defects, where, for instance, the coronary arteries, instead of arising from the aorta, issue from the pulmonary artery. However, anomalies of the coronary arterial tree do exist which, in the absence of a significant obliterative arterial lesion, permit a restricted circulation and function. In this category are the few cases recorded in medical literature in which a single coronary artery supplied the entire heart. Its abrupt occlusion obviously would terminate in sudden death. More commonly, the entire posterior and lateral aspects of the left ventricle and a portion of the apex are supplied by branches of the right coronary artery in the congenital absence of the left circumflex coronary artery. Instances have also been observed in which the right coronary artery in no degree supplied the posterior aspect of the left ventricle (which it normally does) and, therefore, all of the left ventricle, except the anterior aspect and a portion of the apex, was entirely supplied by an overdeveloped left circumflex artery. Therefore, in either event, the sudden occlusion of such an anomalous artery would certainly not be conducive to survival. At the present time, no positive clinical method exists for the identification of these anomalies, although the occurrence of transient recurrent episodes of coronary insufficiency in children or young adults should always recall to mind the possibility of the condition.

As in the cases of coronary artery disease in which thrombotic occlusion has not occurred, the patients who have acute myocardial infarction are candidates for sudden death from profound disturbances of rhythm, such as ventricular fibrillation, ventricular tachycardia and asystole. It has been suggested that under these circumstances foci of increased irritability arise in the junctional zone of myocardium between the infarct and normal cardiac muscle. However, likewise in these cases, the incidence of profound disturbances of rhythm is not known, because rarely does the element of time permit graphic registration of the activity of the heart. Where extensive infarction of the interventricular septum occurs, complete heart block with or without convulsive syncope may occur soon after the occlusion and eventuate in death in a few hours or days.

It is not an uncommon observation that patients who survive sudden thrombotic occlusion of a coronary tributary and in whom transient recurrent episodes of coronary insufficiency had previously occurred, may entirely lose their painful seizures. This is explained by the fact that a new obstructive lesion has given added impetus to the developing collateral circulation.

In order to amplify my opening statement concerning the more optimistic present-day concept

of the prognosis in coronary artery disease, I shall cite briefly from the recent study of Parker, Dry, Willius and Gage. The survival rates of patients having transient recurrent episodes of coronary insufficiency (angina pectoris) were determined for a group of 3,400 patients who were examined at the Mayo Clinic over a period of twenty years and for whom follow-up data could be secured.

All survival rates of the patients in the study were compared with the survival rates of a comparable group of the normal population having the same age and sex distribution. This control is obviously the necessary yardstick for comparative study.

The highest mortality rate occurred in the first year following the establishment of the diagnosis of coronary artery disease. Thereafter the yearly mortality rate was less, although it continued relentlessly yearly throughout time. The survival rates of women were greater than those of men.

When corrected for deaths not due to coronary artery disease, the five year survival rate of patients thirty to thirty-nine years of age is definitely less than when the disease manifests itself later in life. This fact is probably based on the inadequate development of collateral circulation in the younger age groups.

Such associated conditions as cardiac hypertrophy, significant hypertension, previous cardiac infarction, congestive heart failure and significant electrocardiographic abnormalities are clearly related to a higher mortality rate and a lower survival rate.

The perfect statistical study has as yet not been conducted. Complete and, therefore, precise data cannot be ascertained until every patient in the selected group has died. My younger colleagues are dedicated to the ultimate completion of this particular investigation.

In this discussion I have considered the known factors which influence survival and death in coronary artery disease. There remains no doubt that numerous unknown factors exist. When the time comes that more conclusive knowledge relating to the genesis of atherosclerosis and arteriosclerosis with special reference to the coronary arteries is available, then perhaps active steps can be undertaken both in childhood and adult life at least to diminish the incidence of the disease and perhaps to prolong the lives of patients afflicted.

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THE DRUG ADDICT

(Continued from Page 484)

eral Narcotic Bureau is referred to the Minnesota State Board of Medical Examiners for investigation and disposition. If the physician is willing to be hospitalized under the care of a competent medical man of his own selection, until he has made an apparent recovery, no further action will be taken. He will probably be temporarily deprived of his narcotic permit, and if there is a recurrence his license to practice medicine may be rescinded. This arrangement with the Federal Narcotic Bureau is fortunate, indeed, as it gives Minnesota an opportunity to supervise and treat its own physicians who become so afflicted. Furthermore, the physician can be treated in a Minnesota hospital by a physician of his own choice, instead of being sent to the United States Public Health Service Hospital in Lexington, Kentucky.

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COLD PREVENTION STUDY

Influenza Vaccine for the Prevention of the Common Cold

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REPORTS from various sources that influenza vaccine seems to prevent attacks of the "common cold" led us to set up a simple experiment to test the possible effectiveness of influenza vaccine in this regard. Fortunately, this study was made during the winter of 1946-47 when there was relatively little influenza in this area. Therefore, the effectiveness of the influenza vaccine in preventing influenza itself was not a complicating factor in analyzing the results of this study.

The experimental subjects were University of Minnesota students. The technique of the study was the same as that followed in our previous cold prevention studies.[1-4] Early in October, 1946, there were 666 subjects enrolled in the study. They were unselected, except that it was made known that we wanted persons who were especially susceptible to colds. After receiving instructions, and after each student had filled in the questionnaire concerning the previous experience with colds, he or she was given a single injection. As an experimental group, 346 subjects received 1 c.c. of standard influenza A and B virus vaccine.* Serving as a control group, 320 students received 1 c.c. of sterile physiological saline solution. None of these students knew the nature of the injection received. Following the injection, the students were questioned periodically by questionnaire cards. Of the original 666 who were enrolled, 480 completed the study. Some of the losses were due to cancellation from school, others to lack of co-operation in the matter of reporting, and a few were eliminated from the group because their "colds" appeared to be mainly of an allergic nature.

Table I summarizes the results of the experiment. It will be noted that the vaccinated group had essentially the same number of colds as the control group during the period of the study: 2.9 colds per person and 3.0 colds per person, respectively. If one compares these numbers with the average number of colds which the students reported that they had had during the previous year, one finds that they represent a reduction of 47 per cent for those receiving the influenza vaccine and 41 per cent for those receiving the saline. It must be remembered, however, that these figures for percentage reduction are based upon the students' memories as to how many colds they had had in previous years. The fact that memories are not too reliable in this regard is indicated by the fact that many could not even recall at the end of the study how many colds they had had during the period of the study. The effect of this for the group as a whole is shown in Table II. The left hand column for each group represents the number of colds reported by the students on their periodic reports submitted during the study. The right hand column represents the answers which the same students gave to a question which appeared only on the final report. This question

TABLE I. COLD PREVENTION WITH INFLUENZA VACCINE

	Vaccine Group	Control Group
Subjects who began study	346	320
Subjects who completed study	252	228
Percentage who completed study	72.8%	71.2%
*Number of colds per person during previous year (average)	5.5	5.1
Number of colds per person during period of study (average)	2.9	3.0
Difference between average number of colds in experimental and control groups		
Number of days per person lost from school (average)	.7	.9
Percentage of group who had no colds during year	4.0%	6.6%
**Percentage of students with colds in which complications developed	19.8%	21.0%
Percentage sent to infirmary with colds or complications	1.6%	.9%
Total days in bed per 100 students in group	101.2	128.3
†Severity of colds, percentage of total colds for each group		
Mild	59.2%	59.8%
Severe	33.8%	33.9%
Very severe	6.9%	6.3%
†"Helpfulness" of vaccination, percentage of total answers		
Helpful	50.8%	51.8%
Not helpful	19.8%	22.8%
No answer	29.4%	25.4%

*Reported from memory.
**Sinusitis, otitis, bronchitis, pneumonia, et cetera. (as reported by student).
†As judged by the student himself.

TABLE II. ACCURACY OF REPORTING COLDS

	Total Colds Reported on 3 Interim Reports	Total Colds for Year as Reported at End of Study
	Vaccine Group	
Total	483	581
No. of Cases	181	181
	Control Group	
Total	499	590
No. of Cases	176	176

*Furnished from the U. S. Army supply by Service of Preventive Medicine, Office of Surgeon General, U. S. Army, through Dr. Thomas Francis, Jr., director of Commission on Influenza, Army Epidemiological Board.

asked how many colds they had had during the entire period of study. Since not all of the students answered this final question, Table II is made up on the basis of 181 subjects for the influenza vaccine group and 176 for the control group. Each group over-estimated by roughly 20 per cent.

Because of the possibility that the vaccine might have been effective soon after its administration but not later, the experience of the two groups was compared by "quarters." These quarters are not of equal length because of the necessity of getting the last report before the students started their final examinations. The first quarter extended from early October to January 6, the second quarter from January 7 to April 1, and the third from April 2 to May 15. Table III shows that this breakdown by quarters reveals no evidence of any effectiveness of the influenza vaccine in the prevention of the common cold at any time during the entire period.

TABLE III. NUMBER OF COLDS BY QUARTERS

Quarter	I	II	III
Vaccine Group Average number of colds per person	1.2	1.2	.5
Control Group Average number of colds per person	1.2	1.2	.6

On the periodic report, the students indicated whether, in their opinion, the colds that they had had during the study were mild, severe, or very severe; Table I shows that there is no difference between the vaccinated group and the control group in this regard. They also were asked to indicate on each report whether they believed that the injection they received had been helpful in preventing colds. It will be noted that roughly half of each group and 70 per cent of those who answered this question replied that they believed that the injections had been helpful.

Reactions from Influenza Vaccination

One week after the vaccination had been accomplished, cards were sent to the students asking about reactions which might have been caused by the injections which they had received. The reports are tabulated in Table IV. This is the only tabulation that shows any difference between the vaccinated and the control groups. In addition to the reactions listed, several others were written in, but of these the only one of importance was generalized urticaria reported by one subject who had received the influenza vaccine. Of special interest are the "reactions" reported by those who received the injections of physiological saline. This indicates that even in this matter a base line must be drawn when considering the reactions to an injection.

TABLE IV. REACTIONS TO VACCINATION IN COLD PREVENTION GROUP

	Vaccine Group N=320 Per Cent	Control Group N=305 Per Cent
No reaction	16.2	78.0
Sore arm	78.4	9.2
Headache	16.9	9.2
Backache	5.9	.3
General aches and pains	14.1	3.3
Chill	10.6	1.6
Fever	14.4	5.6
Incapacitated	6.9	1.0
Days lost, school or work	.06	.01
Days in bed	.06	.01

TABLE V. REACTIONS TO INFLUENZA VACCINE FROM DIFFERENT MANUFACTURERS

	"Influenza Prevention" (Influenza Vaccine by manufacturer X) N=1952* Per Cent	"Cold Prevention" (Influenza Vaccine by manufacturer Y) N=320 Per Cent
No reaction	12.8	16.2
Sore arm	79.9	78.4
Headache	26.2	16.9
Backache	11.7	5.9
General aches and pains	25.2	14.1
Chill	16.1	10.6
Fever	21.4	14.4
Incapacitated	14.0	6.9
Days lost, school or work	.08	.06
Days in bed	.10	.06

*The average age of the persons in the first column, since it included some University faculty members and employes, is a little greater than the average of those in the second column.

It was found, incidentally, that reactions to influenza vaccine varied according to the make of the product, even though the vaccines were made by the same process. At the University Health Service, a considerable number of students, faculty members, and employes were given influenza vaccine at about the same time that this cold prevention study was inaugurated. Practically all the vaccine used for this large group was made by manufacturer X, whereas the influenza vaccine used for the cold prevention study and furnished us by the Influenza Commission of the U. S. Army was made by manufacturerY. Table V compares the reports of 1,952 of the former group who replied to our questionnarie with the reports of the students in the cold prevention study who received influenza vaccine.

(Continued on Page 510)

CLINICAL-PATHOLOGICAL CONFERENCE

OMPHALOCELE

O. W. ROWE, M.D., R. C. PEDERSON, M.D., and A. H. WELLS, M.D.
Duluth, Minnesota

Dr. A. H. Wells: Omphalocele is a congenital protrusion of abdominal viscera into the umbilical cord. The lesion is referred to by a variety of synonyms including congenital umbilical hernia, exomphalocele, hernia funiculi umbilicalis, ectopia viscerum, amniotic hernia, amniotic umbilicus, amniocele, and coeloma funiculi umbilicalis persistence. We are presenting a series of five cases of omphalocele representing some of the extremes of this congenital abnormality. Undoubtedly, a better knowledge of this type of hernia will result in a much higher percentage of survival.

Case Presentations

Case 1

Dr. R. C. Pedersen: A full-term, spontaneously delivered, 6 pound 13 ounce, white baby girl (Case 3666) appeared perfectly healthy at the time of birth on March 5, except for a bulging umbilical cord hernia (Fig. 1) measuring from 6 to 8 cm. in diameter. Pediatric consultation led to the use of sulfa powder and sterile dressings over the translucent hernial sac. An operation did not seem to be immediately advisable. After forty-eight hours, the infant's color became very poor, with obvious cyanosis of the lips and fingers. This cyanosis continued with periods of improvement, until her death. Continuous oxygen therapy was started on March 10. The infant took her feedings well, and although repeated x-ray examinations failed to reveal pulmonary disease, penicillin was given. The white blood count was 12,600 with 50 per cent neutrophiles. There were 4,300,000 red blood cells and 15 gm. of hemoglobin. Respirations were 97 per minute. There was a low grade fever, the temperature ranging from normal to 101° F. In spite of the recognized poor prognosis, it was deemed necessary to repair the umbilical cord hernia surgically, since there was obvious beginning gangrene of the tissue-paper-like covering of this structure. On March 15, under ether-oxygen endotracheal anesthesia, a complete circular incision around the defect in the anterior abdominal wall led to the removal of degenerating necrotic coverings of the hernia and a return of the liver tissue, which completely filled this sac, into the abdominal cavity. The fascia and skin were closed over the defect.

The infant's respirations remained rapid at 90 per minute. Her temperature rose to 102° F. She continued to have cyanosis and coughed occasionally. She expired forty-eight hours postoperatively, at the age of twelve days.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.



Fig. 1. *(above)* Omphalocele with a drying amniotic membrane.
Fig. 2. *(below)* Opened huge omphalocele containing nearly all the abdominal viscera.

Dr. A. H. Wells: This newborn white female infant weighed 2,830 gm. and measured 48 cm. in length. There was a good deposit of subcutaneous fat, and there were no congenital abnormalities apparent on the external surface. A recently sutured operative wound at the umbilical site was intact and free from healing and suppuration. There were flakes of fibrinous exudate over serosal surfaces throughout the peritoneal cavity, cultures of which revealed hemolytic Staphylococcus aureus.

This exudate also covered a remarkably congenitally deformed liver which could be divided into two parts of approximately equal size. One portion, represented by the right hand portion of the left lobe, had a normal contour, but was about half the usual size of these parts of the liver. A globular pedunculated mass of liver tissue, measuring 3 by 3 by 4 cm., hung by a pedicle from the left lobe of the liver and represented the portion of liver tissue which had protruded into the omphalocele and was surgically returned to the peritoneal cavity. A thin flat pedicle of fibrous tissue, measuring 2.5 cm. broad and 5 mm. in thickness, separated the left lobe from the herniated portion. The gall bladder and its ducts were not unusual. There was a mottled congestion and approximately 20 per cent atelectasis of the lobes of both lungs, which revealed many small clumps of pus cells and many squamae scattered through air spaces and bronchioles of histologic sections. The final diagnosis was omphalocele containing a congenitally deformed left lobe of the liver, with surgical correction, generalized peritonitis and bronchopneumonia.

Case 2

Dr. O. W. Rowe: A seven-day-old white male infant was referred to me in a critical condition with a huge omphalocele, the size of a large orange. The hernia was covered with an extremely thin translucent membrane which was beginning to turn black in places. The child was quite dehydrated. After preliminary efforts at restoration of fluids and electrolyte balance, on June 19, twenty-four hours after admission, the hernia was repaired by Dr. Oswald Wyatt of Minneapolis at St. Mary's Hospital in Duluth. Under drop ether anesthesia, an incision was made circling the umbilical mass and extending down into the peritoneal cavity. The hernia was found to contain almost the entire mass of small bowel and the entire left lobe of the liver which was extremely swollen and edematous (Fig. 2). The round ligament containing the umbilical vein was divided and ligated. The small bowel and liver were slightly adherent to the edge of the hernial defect and were freed up by blunt dissection. With difficulty, it was possible to reduce and replace the liver and push it up under the diaphragm. With great effort and manipulation, the small bowel was finally returned to the abdominal cavity; however, the margins could not be approximated, so that the opening was closed by skin alone, using interrupted cotton through-and-through sutures. It was possible to close the peritoneum only for a short distance at the extreme upper end of the wound. There was a postoperative fever reaching as high as 101° F. Transfusions, intravenous subcutaneous fluids and antibiotics supplemented the surgical procedure. On June 25 the secondary operation of closure of the peritoneal cavity was accomplished without too much tension. There followed a long period in which it was extremely difficult to maintain fluid and electrolyte balance and feed the child. Efforts were finally successful and the child was discharged in good condition. On December 17 the referring physician, Dr. Closuit, reported that the patient was in excellent condition.

Case 3

Dr. E. Zupanc: This was a spontaneously delivered, anencephalic, stillborn, white female infant, approximately 3 months premature—a patient of Dr. Ralph Eckman. The thirty-six-year-old mother, gravida II, had had some nausea and vomiting for three months prior to delivery.



Fig. 3. Huge defect of the abdominal wall and the omphalocele covered by a transparent amniotic membrane.

Dr. A. H. Wells: This female anencephalic fetus, 23 cm. in length and weighing 720 gm., was attached to a 350 gm. placenta by a short umbilical cord (Fig. 3). Most of the abdominal viscera protruded into a huge omphalocele, including the liver, spleen, and nearly all of the small and large intestines. Other congenital anomalies included lumbar myelomeningocele, almost complete absence of the brain and spinal cord, and bilateral club feet.

Case 4

Dr. E. Zupanc: This "slightly premature" white male infant was delivered spontaneously in a Superior, Wisconsin, hospital by Dr. H. A. Sincock. The infant lived for a few minutes after birth.

Dr. A. H. Wells: A premature white male infant, weighing 1,350 gm., and 36 cm. in length, was attached to a placenta of average size by a 15 cm. in length umbilical cord (Fig. 4). At the base of the cord, the

amniotic membrane was continued as the only covering of a huge defect in the anterior abdominal wall, into which protruded the liver, stomach, small intestines and 75 per cent of the colon. The defect involved approximately half of the anterior abdominal wall, including

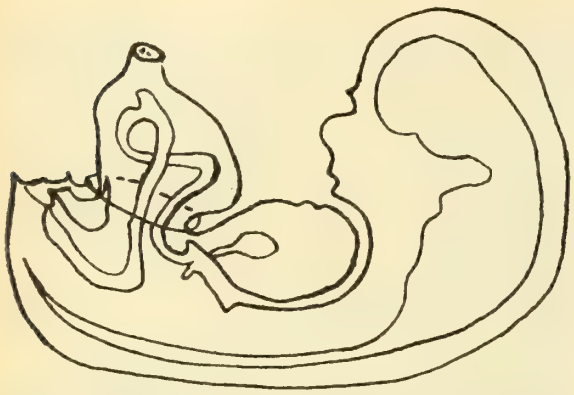


Fig. 4. Schematic drawing to show physiologic herniation of the mid-gut into the exoceloma.

most of the right side and superpubic area. In addition, there was a complete spina bifida, lumbar myelomeningocele, and bilateral club feet.

Case 5

Dr. E. Zupanc: This three month premature, white, stillborn female (Case 4062) was spontaneously delivered after an easy labor. The thirty-seven-year-old mother, a patient of Dr. R. J. Moe, had had no complications of pregnancy.

Dr. A. H. Wells: This premature, typically anencephalic infant measured 28 cm. in length and weighed 860 gm. The omphalocele was similar to that of Case 3 (Fig. 3). It measured 8 cm. in diameter, and the short umbilical cord was 15 cm. in length. The hernia contained the stomach, liver, spleen, small intestines, and all of the colon except the sigmoid. The abdominal cavity was extremely small. Other deformities were an absence of brain and spinal cord and a complete spina bifida.

Embryologic Etiology

Dr. A. H. Wells: In the normal process of development of the abdominal cavity and its contents, there appears a physiologic umbilical hernia, or exoceloma, at the fourth week of embryonic life, into which the mid-gut protrudes (Fig. 4). This is apparently due to increased intra-abdominal pressure at that time. At three months there is a reposition and an obliteration of the exoceloma, possibly due to decreased intra-abdominal pressure. It would then seem that an omphalocele is an arrested embryonic development, similar to the majority of the other congenital defects to which man is subject. In extreme form, there appears to be an interrelationship with abnormalities of development of whole sections of the abdominal wall, the liver and diaphragm. It has been suggested that a hyperlordosis of the spinal column could be a factor in the intra-uterine development of omphalocele. There have been references[3,4] to successive infants of the same parents having this umbilical defect. In a series of ninety-one cases[11] of omphalocele, more than one congenital defect occurred in one third of the cases. These included Meckel's diverticulum, atresia of the descending colon, spina bifida, rotation of the large intestines, epispadias, absence of common duct, macroglossia, cleft palate, hare lip, patent omphaloenteric duct, mongoloid, imperforate anus, stenosis of colon, microcephaly hydramnion, absence of tibia and absence of radius and ulna. Omphalocele is described as occurring in from 1 in 5,000[7] to 1 in 10,000.[6] Twelve cases were described as the Public Maternity Hospital at Stockholm in 120,000 births.[8] There are approximately 400 cases recorded in the literature.[12] The sexes appear to be equally involved.[6,8]

Pathology

Umbilical cord herniae have been classified depending upon their size, contents, theoretical etiology and the extent of eventration of the adjacent abdominal wall. The lesion can vary up to the size of a child's head. In one report,[11] fifty-two cases measured less than 5 cm. in diameter, and twenty-six measured more than 5 cm. Forty-five of 155 cases contained liver in the hernial sac along with other viscera.[7] The liver alone in the sac similar to our first case has been considered rare.[10] Portions of the small and large intestines, spleen and stomach are frequently found in the sac, and rarely the heart, kidney, uterus, ovaries and omentum have been found in the hernia.[7] The defect in the adjacent abdominal wall may involve a large portion of this wall similar to our Case 4. The hernia may be so large as to interfere with labor[7] or so small as to be tied off with the umbilical tape at the time of birth.[8]

Treatment

Except for the smallest omphaloceles, there is almost unanimous agreement that surgical repair at the earliest possible moment is the treatment of choice.[2,5,9] The amniotic membrane covering the umbilical cord and the hernia within the cord is a nonvital structure which soon dries out and becomes gangrenous, permitting the entrance of bacteria into the hernia and the peritoneal cavity. Of fifty-six cases[11] repaired in the first twelve hours, 21.4 expired; of nine cases operated upon between twelve and twenty-four hours, 44.4 per cent expired; and of thirteen cases operated after twenty-four hours, 61.6 per cent expired. The important factors determining the prognosis are the diameter of the defect, the size of the hernia and delay of the operation. Newborn infants are said to tolerate the shock of anesthesia and operation satisfactorily.[9] Of forty-five cases[7] containing a portion of liver, eleven recovered. The usual procedure is to excise the hernial sac back into the margins of normal skin, return the contents of the hernia into the abdominal cavity and close the abdominal wall. Care should be exercised not to increase the intra-abdominal pressure too extensively. If there is danger of this, then the

abdominal wall fascia should be left open and the skin alone closed over the defect.

Later the peritoneum and fascial sheaths of the abdominal wall can be more easily approximated. Respiratory embarrassment, paralytic ileus, displacement of the heart and large vessels or compression of the inferior vena cava are the common complications resulting from excessive intra-abdominal pressure.[6,8,9] A possible patent urachus should be kept in mind at the time of surgical repair to avoid a urinary bladder fistula. Coexisting serious congenital abnormalities may render a surgical repair of the omphalocele futile.

Conclusions

Five cases of omphalocele have been presented. In one, the hernia was filled with a portion of the left lobe of the liver. The full-term infant expired on the twelfth postnatal day, two days after a surgical repair of the hernia, as the result of acute generalized peritonitis and bronchopneumonia. There was a surgical repair of a large umbilical cord hernia of the second case on the eighth postnatal day. Because of a disproportion between the size of the abdominal cavity and the hernial contents, the surgical opening could only be closed with skin. Subsequent closure of the entire abdominal wall led to a cure. The last three cases were infants who were stillborn or who lived only a few minutes. They had huge hernias, one of which had an associated extensive defect of the abdominal wall covered by amniotic membrane. All three had multiple other serious congenital anomalies. The embryology, pathology and treatment of omphalocele has been briefly discussed with references to the literature.

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Case Report

CEREBELLAR ABSCESS

Recovery Following Chemotherapy

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CONSIDERABLE speculation is possible in the case to be presented, and opinions as to what took place may differ. Early chemotherapy and susceptibility of the involved organism to the drugs used were undoubtedly very important factors in the good results obtained. This case is considered to be of special interest because there was no surgical intervention. Pilcher and Meacham in Spiegel's *Progress in Neurology and Psychiatry* for 1946, in discussing abscess of the brain, state: "Conservative opinions agree, for the most part, that surgical drainage is essential despite the great value of chemotherapy." The same authors write no differently in 1947. Simple aspiration of a cerebellar abscess is recommended. In the 1946 *Year Book of Neurology and Psychiatry* the editor writes: "The radical method of extirpation introduced by C. Vincent has now, thanks to penicillin, become the method of choice in dealing with abscesses. Penicillin should never be depended on to sterilize an abscess. Pus should be evacuated and penicillin used to prevent the dissemination of the infection which has heretofore been feared."

From the Department of Neuropsychiatry, The Duluth Clinic, Duluth, Minnesota.

Presented before the Minnesota Society of Neurology and Psychiatry, September 13, 1947, St. Mary's Hospital, Duluth.

Case Report

The patient was a fourteen-year-old boy, who was admitted to St. Mary's Hospital in Duluth from a small town in Wisconsin on February 16, 1947. About four weeks before, he had had a drainage from both ears, which persisted for about ten days. Two weeks before admission, he developed a severe headache in the temporal and occipital regions. Vomiting and nausea had ensued, and there had been some epistaxis (a physician had been examining the nose). There had also been a tremor in the right hand and weakness in the right upper extremity. The father stated the patient had had penicillin injections, though he was not sure of the amount, but at least twenty-nine were given during the early stage of otitis. The right ear drained more profusely and for a longer period than the left. The mother, in a later interview, said the patient had had an apparent occasional involuntary movement of the

right hand in the spring of 1946. The patient only recalled that he had a "funny feeling" in the right shoulder and right hand for a short time in the early part of 1946.

The physical examination revealed nothing pertinent. An eye, ear, nose and throat department report indicated there was no evidence of an otitis media at this time and the eardrums were dry.

Neurological examination revealed the following: The patient was a well-nourished and well-developed teenaged boy, who was somewhat listless, though alert and co-operative to questions and directions. The recumbent position made him subjectively dizzy. There was no dysphasia. Slight stiffness of the neck was present, with a questionable Kernig's sign bilaterally. There was no tenderness over the scalp. Hearing was probably equal bilaterally. The fundi were normal except for a slight fullness of the inferior margins of both discs. The visual fields, to confrontation tests, were normal. The pupils were large but equal and reacted well to light. A horizontal nystagmus with gaze to the right, quick component to the right, and a less pronounced vertical nystagmus with upward gaze were present. (Later a slight nystagmus was also observed with gaze to the left.) Gaze to the right made the patient dizzy. The corneal reflexes were equal and the cranial nerves were otherwise intact. Slight weakness of the right upper extremity and pronounced intention tremor and adiadokokinesis were found in the right hand. There was no sensory loss to pinprick or cotton. A slight in-co-ordination of the right foot on heel to knee test was evident, and wiggling of the toes of the right foot was much slower than of the left. The tendon reflexes were considered normally active in the upper and lower extremities, though perhaps the right radial was less active than the left. The abdominals were active and equal in all four quadrants. There were no pathological reflexes, and no clonus was elicited. There may have been slightly less muscular tonus in the right upper extremity than the left. The gait and Romberg were not tested.

His temperature was normal on admission and remained thus. Laboratory reports were as follows: red blood cells 4,720,000; white blood cells 5,150 per c.c.; hemoglobin 14.1 grams and color index 1.03; Schilling —2 basophiles, 48 segmented cells, 49 lymphocytes and 2 monocytes. Urinalysis was essentially negative, except for 1 or 2 white cells. Blood culture was sterile at all times. Blood nonprotein nitrogen was 37 milligrams per cent. Sedimentation rate on February 16, 1947, was 11 mm., incomplete. Blood findings and urinalysis remained essentially normal throughout hospitalization. On February 21 the color index was reported as 0.95 with a 13.2 grams hemoglobin.

Roentgenograms of the mastoids were reported as follows: "No definite evidence of mastoiditis on either the right or left side. However, examination was incomplete, and the Law position should be made when the patient is able to co-operate."

The diagnosis was right cerebellar lobe abscess, secondary to otitis media.

Sulfadiazine and penicillin were started on the day of admission. The sulfadiazine level was brought up to 15 milligrams per cent, but the drug was discontinued after five days because of the patient's difficulty retaining it in his stomach. He received a total of 25 grams of sulfadiazine. Penicillin, 30,000 units every three hours intramuscularly, was given from the day of admission to the hospital, symptomatic treatment, including parenteral fluids, was also given. The patient's condition gradually improved, so that headache was present only intermittently and was not as severe as formerly, after he had been in St. Mary's Hospital about one week. He began to eat well, and the frequent emesis, present at first, became uncommon. The intention tremor of the right hand diminished considerably and the patient could finally touch the nose with the index finger of the right hand, which was impossible when he arrived at St. Mary's. The nystagmus diminished. Movement of the toes in the right foot improved considerably. The patient became more active and interested in his surroundings.

He was sent to the Mayo Clinic at Rochester on February 26, 1947, for consideration of operation.* By that date he had received a total of 2,160,000 units of penicillin intramuscularly in Duluth. Operation was withheld, and instead penicillin was continued in a dosage of 20,000 units intramuscularly every three hours until March 22, 1947. He received a total of 3,860,000 units of penicillin at Rochester and this plus what he was given in Duluth equalled 6,020,000 units. At Rochester, the patient appeared to make a complete recovery from what was also considered a cerebellar abscess, which was probably halted before it progressed beyond the early stages of inflammation.

The patient was seen in Duluth on August 14, 1947, and again on September 13, 1947, and the neurological examination was entirely negative each time. The patient looked well and had no complaints.

*Dr. H. L. Parker was his attending physician in Rochester.

COLD PREVENTION STUDY

(Continued from Page 505)

Summary

1. A controlled study indicates that influenza vaccine A and B is of no value for the prevention of the common cold.

2. The subjects who received influenza vaccine reported more reactions than the "control group," and the subjects who received vaccine made by one manufacturer reported more reactions than those who received vaccine made by another company.

This study was conducted at the request of the Commission on Influenza, Army Epidemiological Board, Office of the Surgeon General, U. S. Army, Washington, D. C.

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A HISTORY OF MEDICINE IN SCOTT AND CARVER COUNTIES

(Continued from April issue)

Although the epidemic abated somewhat, more deaths occurred in the country during the next year, and several families at Jordan and Helena lost all their children. In December, 1882, diphtheria broke out in a malignant form in portions of Carver County. Ten or more children died within the first two weeks. The following May found several families afflicted at Jordan, one family having nine cases, and another family six. Eight patients died there before the second week of June. At Belle Plaine, diphtheria seemed to be on the increase, and complaints arose against the local board of health. In January, 1884, several cases appeared at Waconia, Carver County. January of the next year brought a number of cases and several deaths at Belle Plaine, and more complaints against the inactive board of health. Evidently no efficient measures could be evoked; one is led to believe that the condition was typical. In 1886 more than fifteen children died of diphtheria in Carver County, mainly in the smaller towns. Norwood, Young America, Dahlgren, Hollywood, and Watertown each lost at least one resident. At Waconia nine deaths among children were reported. It is probable that fewer than a third of the total number affected died.

During 1887, 1888, and 1889 diphtheria continued to take a small toll of children from each county. Characteristically, it flourished during the cold months. Large families had no effective way of isolating a sick child, so that two or three deaths frequently occurred in one household. Schools were closed at Camden, in 1887, and at Belle Plaine in 1888.

Certain homely treatments used for diphtheria were published in the county newspapers. "Fumes of turpentine thrown in a bowl of boiling hot water, and then cover the patient and bowl tightly in a heavy shawl" was suggested. If this failed, the recipe recommended sending for a physician.

During 1890 and 1891 diphtheria was considered epidemic at several points in Carver County, namely, Chaska, Waconia, Young America, Norwood, Camden, Benton, and Schnappsburg. The state board of health investigated the cases during December 1890. Dr. Grivelli was directed by the board to visit every school in the neighborhood and make a thorough examination of every pupil's throat. When a teacher at Camden objected to the examination, she was arrested by order of the state board of health. Under order of this board, physicians were employed to prevent the spread of diphtheria throughout the county. The towns had no provision for payments, so the bills were allowed from the county funds.

During January, 1891, the disease appeared in a fatal and highly contagious form at several towns in Scott County. Since November, 1890, there had been fifteen cases of diphtheria in the vicinity of Marystown, with eleven deaths. The disease spread to five families, and many more were exposed. Dr. J. B. Dunn was sent by the state board of health to investigate. Dr. C. N. Hewitt, secretary of the board, came at Dr. Dunn's request, and they conferred with the local boards of health in the infected districts.

Shakopee, surrounded by infected localities, forbade anyone to enter the city who "lived in a family infected with diphtheria or who attended church where any sick bodies were taken for burial or who in any way exposed himself to the contagion" until such a person had been thoroughly disinfected by a competent physician or local board of health and supplied with a certificate stating the time, place, and details of that procedure. The health officer, Dr. Dunn, effected the arrest of parties who failed to comply with the law. The *Shakopee Courier* announced that diphtheria had threatened to become epidemic in Scott County, but the prompt action of the state board of health helped to wipe it out. The statement was optimistic, perhaps untruthfully so, but at any rate diphtheria subsided in Scott County for the next three years.

Meanwhile, Chaska, lacking the equivalent of Shakopee's Dr. Dunn in the way of a health officer, experienced the most extensive scourge in years. The fall of 1892 saw sixty cases by the month of October. It spread alarmingly, unchecked by the authorities, and continued until the fall of the next year. One instance of carelessness may be cited as an example. A boy who had been very ill of the disease returned a book to the school library. Within a few days the child who had next handled the book had died. Apparently no effort was made to close the public schools that year.

In the years following, cases continued to break out from time to time. Nearly every town in the counties of Carver and Scott lost several children from diphtheria during the nineties. New Market Township in the southeast corner of Scott County counted thirty-two deaths during 1894-1896, many of them among adults. In 1894-1895 diphtheria was again epidemic at Shakopee. In January, 1897, thirteen deaths occurred from that disease in the towns of Jordan, Sand Creek, St. Benedict, and St. Lawrence. Schools were closed twice during the winter of 1895 at Hancock town. At this time, quarantine regulations were in effect in all the towns.

Generally speaking, more care was taken with diphtheria than with other diseases since it was considered the most dangerous. Diphtheria antitoxin came into general use about 1895, but it seemed to have no immediate effect in lessening the extent of the disease. Perhaps successful treatment resulted in less fear of the disease and more carelessness.

Of the other more dangerous contagious diseases, smallpox, scarlet fever, and typhoid fever, the first caused the most concern. Carver County seemed comparatively free from it, while in Scott County several towns were attacked. Many cases appeared at Jordan in 1881-1882, and in the eastern part of the county during July, 1882. Dr. James Dunn of Shakopee proved efficient on this occasion as on many others. Having found six children of Peter Saucer at Credit River ill of the disease, he sent his brother to Saint Paul to consult with the state board of health regarding a course to be pursued to prevent its spreading. Upon the return of his brother, Dr. Dunn, accompanied by a county commissioner, visited the locality and assisted the town supervisor in the organization of a town board of health and the establishment of quarantine regulations. Dr. Hewitt, secretary of the Minnesota State Board of Health, in company with Dr. Dunn, then visited the town authorities of Spring Lake, Cedar Lake, New Market and Credit River and succeeded in "awakening the necessary interest of the people and town officers to prevent its spreading." Dr. Dunn was appointed health officer for the four towns. One of Mr. Saucer's children, who died of the disease, had been sick a week, while the others attended school, and neighboring children and parents frequently visited the house. It was expected that the disease would spread in spite of precautions. In August Dr. Dunn reported, "There have been thirty-nine cases of smallpox in

six families; eight have died, others are convalescing, except three, who may be out of danger. Ten of the thirty-nine have been vaccinated; none of those ten have died, and only one was at all seriously ill, having been vaccinated years ago."

It is interesting to note that the county commissioners of Scott County petitioned the state legislature to make an appropriation to relieve the towns of Credit River and New Market from the pecuniary obligations which they, in good faith, assumed to prevent the spread of smallpox to the other parts of the state.

An incident occurred in April, 1900, which shows the dread of the disease which most of the people, including some physicians, had. Dr. Landenberger of New Prague heard of several cases of smallpox at Cedar Lake. He notified the board of health of Cedar Lake which, in turn, called upon him to investigate. Being ill, he sent Dr. McCarthy, who looked through the window at the patients and diagnosed the affliction as smallpox. McCarthy telegraphed the state board of health, and they sent Dr. William A. Hunt of Northfield to investigate. Seven cases were reported. Somewhat concerned, the local board of health then informed the state board of health, and that body sent Dr. J. B. Dunn of Shakopee. The latter made a thorough examination and reported that the patients were not suffering with smallpox but with some kind of pustulous disease of the skin.

Belle Plaine experienced a smallpox scare in August, 1894. A working girl had returned home from Saint Paul with what she thought to be chickenpox. As soon as it was diagnosed as smallpox, all at her house, and some who had just left, were vaccinated and quarantined. The girl was removed to a tent on the river bank where she was cared for by her mother and her step-father. The board of health acted promptly, effectively, and with unusual disregard for cost. The expenses involved about $300. Evidently so much had been done at the county's expense that the girl's parents expected to be paid for their services, their beer, and their fancy groceries. These bills appeared in the county records but, of course, were rejected.

Smallpox recurred throughout the state in 1899. All children had to be vaccinated before starting school that fall. No cases appeared in Scott or Carver Counties until the spring of 1900, when one case at Jordan caused the schools there to be closed. Several other cases occurred throughout Scott County that year. Actually, the smallpox cases in these counties were relatively few compared with those in other sections of the state, and also with cases of other contagious diseases within these counties.

Typhoid fever could hardly have been called epidemic at any time during the eighties and nineties. Scott and Carver Counties together averaged not more than three cases a year. At least one third of these cases, however, were fatal. In many instances, typhoid was contracted in Saint Paul or Minneapolis, and the patient returned to his home to be cared for.

Scarlet fever was prevalent at Shakopee in 1882 and 1886, and in a light form in the summer of 1889. It appeared again in the spring of 1895. No other towns in either county experienced so many cases. The total number could hardly have exceeded the number of typhoid cases, and the disease proved less fatal. Quarantine regulations probably did much to prevent its spread.

Measures were taken in the late nineties to make more explicit the duties of the town boards of health and to place the financial responsibility of their activities. In 1895 a law was passed in Carver County providing that "Each Town, Village and City shall provide for the payment of the expenses in their respective town, village, or city incurred by the control of contagious diseases." Heretofore, the towns frequently sought financial aid from the county or the state. In 1898 a state law required that every city should have a board of health to consist of not

less than three members, one of whom should be a physician, and that this physician should be the executive of the board. The terms of office and other details were specified.

Neither Carver nor Scott County could boast a hospital before 1900. Patients who could not be cared for at home went to Minneapolis or Saint Paul hospitals. It was customary for doctors in outlying towns to consult city physicians if a case proved difficult. Thus, people grew accustomed to looking to the Twin Cities for these services. It is probable that there was no adequately equipped operating room in either county until 1899, when the county physician of Scott County recommended the fitting out of such a room at the poorhouse for the use of the inmates. He was authorized to purchase the necessary furniture. At about the same time, Dr. S. N. Janes of Jordan ran a private hospital, probably very limited in size and equipment and supported for the most part by patients with chronic diseases. In 1900, Dr. M. Schober of Chaska, tried to interest the citizens in a project for the equipping of a first-class hospital in that city. He had succeeded in enlisting the co-operation of the Franciscan Brotherhood of the city and surrounding stations, and was at that time awaiting the sanction of Archbishop Ireland, of that diocese, to give his consent.

It is interesting to note that an unusually large quota of patients was sent from these two counties to the insane asylum at St. Peter. People who needed hospital care and who could not pay the price in the Twin Cities, sometimes managed to prove themselves eligible for state care and were admitted to the hospital at St. Peter. In the year 1899 six patients were sent there from Carver County alone. Knowing its value, Chaska had tried hard to get the fourth state insane asylum built there, but the institution was established at Anoka.

Medical societies flourished no better than hospitals in these counties. Contact with the Minnesota State Medical Society was established in 1869 with the election of Dr. John L. Wakefield, of Shakopee, as a member of that society. But this contact was neither close nor stimulating to most of the physicians in Scott and Carver Counties. Not more than eight or ten, altogether, became members before the turn of the century.

The Scott County Medical Society was organized about 1887 and continued for about three years. Its members were Drs. James B. Dunn, C. A. Entrup, A. B. Walter, M. H. Manson, G. R. Moloney, and J. F. Mulholland. No record of the society's aims remain, but a fee table used by them in general practice and surgery is in the possession of the Minnesota State Medical Association. The Scott and Carver County Medical Society, a more permanent institution, was organized in 1904. Many of the physicians now practicing in these counties have been active members of that organization.

Biographical Dictionary

Curtis B. Ames came to Chaska, Scott County, in April, 1866, to practice medicine. In 1869 he moved to Watertown, also in Carver County. Ames was very popular while in Watertown, having the political support of the Democrats there. In December, 1870, he was elected county physician at a salary of $450 a year. In the fall of 1872 he moved to Delano, Wright County, and a few months later he left with his family for Vicksburg, Mississippi.

C. B. Ames was the son of Dr. A. E. Ames, one of the oldest and first physicians of Minneapolis. He was reported to have been graduated from

one of the best medical institutions in the country, and also to have served in the Civil War.

F. M. Ball came to Carver, Carver County, in April, 1874. He remained only a short time, and in 1886 was established at Montrose, where he manufactured and sold a remedy for pulmonary diseases.

Charles Berry practiced medicine in Belle Plaine, Scott County, in 1866. He moved to New Ulm about 1870, where he was called by the Rev. Father Berghold to go in with him in building a hospital.

N. P. Birmingham was a physician who practiced in Belle Plaine, Scott County, in 1876 and a few years following. He succeeded Dr. Pashley after the latter's death.

F. J. Bohland practiced medicine in Belle Plaine, Scott County, in 1890 and for ten years or more after that. In 1896 he served as United States pension examining surgeon. He was county physician in 1879-1900, being assigned to that part of the county only. F. J. Bohland was born in Brooklyn, New York, on September 29, 1866. His early life was spent in Germany. When seventeen years of age, he came to Minnesota and completed his education at the state university.

John W. Bowers was graduated from the College of Physicians and Surgeons of Baltimore, Maryland, in 1882. He practiced in Chaska, Carver County, about 1887 and for two years or more thereafter.

F. W. Brett settled in Waconia, Carver County, in June, 1899. He was a graduate of Rush Medical College and served in various Chicago hospitals for a number of years. He held the position of surgeon for the Chicago and North Western Railroad at the time of his coming to Carver County. He was the son of Dr. C. Brett of Green Bay, Wisconsin.

W. P. Cash (or W. G. Cash) practiced in Norwood, Carver County, in 1878, and for nine years following. He served as county coroner in 1886. In February, 1887, he went to Louisville, Kentucky, for another course of study. In November of the same year he returned to Norwood. He became very ill and decided to move to Duluth.

Charles T. Chamberlain was graduated from the University of Michigan College of Medicine in 1884. In 1886 he was a resident of Belle Plaine, Scott County. Two or three years later he moved to Jordan and practiced there until his death in 1892.

P. L. Cormack opened an office in Jordan, Scott County, in September, 1878. In the following March he moved with his family to Dexter, Mower County, where he managed a drugstore in connection with the practice of medicine.

F. W. Cram came to Belle Plaine about 1878, and in 1879 moved to Jordan, where he became the co-partner of Dr. Walter. He was a graduate of Rush Medical College, and a very promising and popular young doctor. In October, 1880, he married Miss Dora Walter, the daughter of his partner, and in May, 1881, moved to Sheldon, Iowa, where he met with success.

Charles L. Davenport came to Shakopee in 1856 and formed a co-partnership with Dr. Weiser. He died in 1869 at Fort Adams, Mississipi, at the age of forty-five years.

S. B. Davis came to Carver, Carver County, in September, 1865, after having been for four years in the army as an assistant surgeon. About a year after his arrival he published in the Chaska newspaper a list of surgical operations performed by him in July, 1866. Eleven case histories were given, including the names of the patients, all of whom had recovered or were nearly well at the time of publication (August 11, 1866). He soon built up a large practice in Carver and the vicinity. In October, 1866, he received the commission of postmaster of Carver, but resigned a year later to go on a hunting excursion. He returned to Carver but remained only a short time.

Henry R. Diessner, a homeopathic physician, graduated from the Hahnemann Medical College, Chicago, in 1883. In January, 1884, he settled at Waconia, Carver County. His practice extended to Hamburg, Norwood, and Mayer. Dr. Diessner was one of the few homeopathic physicians in the county, and he had a good following of patients from the time of his arrival. In 1886, at the time of the diphtheria epidemic, he acted as health officer of Waconia. He was the most active Republican in the county. In 1897 he was elected a delegate-at-large from this state to the annual meeting of the Republican League Clubs convening at Detroit. The year following he was chairman of the Republican County Committee. He assumed control of the *Waconia Patriot,* the local paper, in 1899. At that time he was considered one of the most prominent citizens and businessmen in the county. During the years 1888 and 1894, he held the office of coroner for the county; also during the nineties he was postmaster at Waconia, chief of the Waconia fire department, secretary of the county Farmers' Alliance, on the United States examining board for pensions, and on the immigration committee for Carver County.

H. S. Donoho was graduated from the McDowell Medical College of St. Louis. He came to Chaska to practice in September, 1868. After remaining for two months, he moved to Rockford, Wright County, to associate himself with Dr. Richardson. The following April, he died of pulmonary consumption at the age of twenty-five years.

Dr. Dover came to Carver in 1867. The following statement was published at the time of his death in March, 1868:

> . . . Dr. Dover was a man of great intellect. He was without doubt one of the most thoroughly educated men in the State, and a good physician. But the Doctor was addicted to strong drink and it carried him away at last. . . .

James H. Dunn was born May 29, 1853, at Fort Wayne, Indiana. In 1854 the family located in Winona, and after the death of his father, in 1859, James H. Dunn was adopted in the family of Mr. Jesse Wheeler, of Winona County. At the death of Mr. Wheeler in 1868, Dunn entered the state normal school at Winona and by his own efforts supported himself until his gradution in 1871. He was at once employed as lecturer in the State Teachers Institute by the Hon. H. B. Wilson and later by Mr. Wilson's successor. During the intervals Dunn was principal of the Alexandria and South Center

schools, and completed a course in natural science at the University of Chicago. He then gave his whole time to the study of medicine, and in 1878, after a three years' course, he received the degree of doctor of medicine from the University of the City of New York, having spent a year of study at Bellevue Hospital and other hospitals in that city. In the fall of 1878 he was appointed instructor of natural sciences in the normal school at Mankato, which position he resigned in May, 1880, to enter upon the practice of his profession at Shakopee.

Dr. James H. Dunn was a skillful and successful surgeon and had a wide practice throughout the county. In 1882 he was given complete charge, as health officer, of the severe smallpox epidemic in the vicinity of Credit River and New Market. During the following year he took his brother, John B. Dunn, into partnership. In 1884 he traveled extensively in Europe, spending much of his time in study. In May of the year 1885 he moved to Minneapolis. He married Miss Agnes Macdonald of Shakopee in the fall of the same year. In Minneapolis he built up a large and successful practice, and became professor of surgery at the state university after the resignation of Dr. Charles A. Wheaton.

John B. Dunn was graduated from Rush Medical College in 1883 and entered into partnership with his brother, Dr. James H. Dunn of Shakopee, Scott County. Their card read:

Jas. H. Dunn Jno. B. Dunn
Dunn & Dunn
Physicians & Surgeons
Shakopee, Minnesota
Surgical and other important cases attended
at a distance by train or team.

The partnership continued until May, 1885, when Dr. James H. Dunn moved to Minneapolis and left Dr. J. B. Dunn in charge of the Shakopee practice. During his stay in Shakopee, Dr. J. B. Dunn acted as city health officer (1890-1892) and as county physician (1885, 1889, 1892 and 1894). He was a successful physician and very well liked in the community. He was anxious to practice in a larger place, however, and in 1887 he moved to West Saint Paul, a community of 20,000 persons, but after a trial of two months he returned again to Shakopee. During the winter of 1892-1893 he studied in Chicago. In February, 1893, he moved with his family to St. Cloud, Minnesota. He was a member of the Scott County Medical Society, which was organized about 1887, and a member of the Minnesota State Medical Society.

(To be continued in the June issue)

President's Letter

OVERTONES OF MEDICAL PRACTICE

Recently a well-known minister, addressing his congregation on what he termed the "overtones" of life, emphasized that there are many things in living besides the "meat and potato" existence. These overtones consist of the things which one does to make life more beautiful and just as in music the overtones lend color and appeal to the selection, so in daily life they contribute largely to the enjoyment of living.

A similar parallel is found in medicine. If a physician thinks of nothing but the daily routine of house calls, office practice, the operating room or the laboratory, he is soon in danger of losing the overtones which are so important to the successful practitioner. A good physician must embody more and must give more than just "meat and potato" medicine. He must on entering the sick room or the operating room infuse the patient with a sense of not only his skill but his human understanding. Look around you today and you will find those very qualities among the well-known professional leaders, which leads directly to the point I am trying to make—

Do medical conventions have a worthwhile purpose?

This question at some time or other is asked by every physician. Is it worth the effort to interrupt one's practice and incur the necessary expense and discomforts of travel? Every physician will agree to the importance of the aims of advancing scientific medicine and the wisdom of pooling his efforts with those of other physicians to extend medical service and advance medical standards. He will also acknowledge a purely selfish reason for going to a medical convention—that of self-improvement. I would venture to predict, therefore, that even the physician who possibly leaves a convention feeling he hasn't accomplished much, actually has made observations, contacts, discoveries of far greater value that he immediately realizes.

The broadening of the physician's practical knowledge through attendance at the scientific sessions; the stimulation and inspiration derived from reviewing the scientific exhibits; the exchange of helpful ideas with professional associates, both in meeting hall and in corridor; and the natural "lift" and enthusiasm which inevitably stem from the fellowship of such a gathering—all of these are powerful factors in creating those overtones which, if properly applied in everyday practice, serve commensurately to elevate the professional status of the physician, increase the service he is able to offer those in his community, and heighten both the regard in which he is held and the rewards which he may rightly expect for such service.

Annual conventions of the Minnesota State Medical Association have a reputation for consistently contributing in a broad way to these intangible but vital overtones of medical practice, and this year's meeting will be no exception. Since the entire program as planned by the Committee on Scientific Assembly, is printed elsewhere in this issue of the JOURNAL, I will not attempt to summarize it here. Certain highlights, however, are worthy of special attention.

As a unique departure from the scientific programs of former years, a series of Clinico-Pathological Conferences is planned for each morning during the general scientific assembly. Members of our own Association and authorities of other states will participate to provide an unparalleled opportunity for general discussion and instruction. Also, the public gathering on the last day, always an inspiring feature of our state meetings, will this year feature a panel of distinguished speakers exploring means of keeping the health of the people in Minnesota at a high level. Representatives of allied health organizations and other groups interested in health will be invited to attend this session.

The swiftly accelerating tempo of medical trends demands that every doctor make an earnest attempt to keep abreast of modern medical progress. Fortunately, members of the Minnesota State Medical Association have abundant and superior educational opportunities afforded them at the 1948 meeting, June 7 to 9, if they will but take advantage of them.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

THE STATE MEETING

THE program of the ninety-fifth annual session of the Minnesota State Medical Association appears elsewhere in this issue.

Simultaneously with the general scientific session, sessions will be conducted in the specialties, and an innovation this year will be the clinics in the various specialties to be held in several Minneapolis hospitals. Wednesday afternoon will feature the Public Health meeting, to which are invited all those interested in public health matters, such as social welfare workers, school and government authorities, and representatives of farm, labor, professional and civic groups. This meeting will be addressed by Dr. A. E. Cardle, president of the MSMA, Dr. John O. Christianson, superintendent of the University of Minnesota School of Agriculture, Lloyd E. Harris of Rochester, Senator Joseph H. Ball, Robert L. Novy, president of Michigan Medical Service, Inc., and Dr. Morris Fishbein. An attendance of some 1,500 is expected.

A social hour at the Hotel Radisson through the courtesy of Mr. George Ulmer, president of the Physicians and Hospital Supply Company of Minneapolis, will precede the annual banquet, also to be held at the Radisson Hotel. Addresses by President Cardle and Nicholas Amtoroff of New York will follow.

These are some of the highlights of the program. Those who attend will be able to make considerable selection in the way of clinics, round table discussion luncheons, scientific cinema, scientific and commercial displays. The distinguished guests from without the state always prove an attraction and the program lists a goodly number who will take part in the program this year.

Every member who can possibly absent himself from his practice, owes it to himself and his patients to take advantage of this opportunity.

DOCTORS AND THE PUBLIC SERVICE

THE U. S. Army needs more doctors. It now has some 1,200 regular army medical officers, approximately the same number it had at the beginning of World War II. It needs 3,000. Having a capacity of only 300 to 400 medical residencies in its army hospitals, the army has instituted a program to commission during the next two years some 600 residents and 600 interns in civilian hospitals and leave them in the civilian hospitals for their training on full army pay and allowances. One year of service for each year of training will be required of those commissioned during their hospital training, although the purpose of this step is the training of physicians for a medical career in the army as specialists and otherwise.

This plan is a special inducement to increase the medical personnel of the army but will take several years to develop the personnel needed. As everyone knows, legislation is being considered for the re-establishment of a Selective Service System and for the first time in our history for the inauguration of a National Service Training program. Included in the proposal are provisions for induction of doctors of medicine, dentistry and veterinary medicine under the age of forty-five "in accordance with such procedures as the President may prescribe." The registration and classification of doctors will doubtless provide for the allocation of the total medical means of the country in case of a great emergency. Presumably, those who received medical training at government expense and those under thirty-five who have had little or no service will be on the priority list.

As voluntary recruitment in the army has not been sufficient to maintain our army at a strength deemed necessary for national protection, a compulsory National Service Training program has been considered necessary. If enough medical men do not enlist to meet requirements, the drafting of doctors would seem the only logical step to take. Never in time of war has it been necessary to draft the medical profession. In peace-

time, there is not the same incentive of patriotism for physicians to enter the armed services. Assurance has been given that in case of another war, the regular army physicians and surgeons will not be delegated to administrative jobs but will rather continue their professional specialties. A career in the army thus should be more attractive to the scientifically inclined medical man.

The Veterans Administration is said to be having difficulty in obtaining sufficient medical personnel for their hospitals. Recourse has already been had to assigning regular army doctors to some of their hospitals. The attempt may be made to assign drafted medical men to the VA hospitals, which procedure is bound to meet with violent opposition. It is to be hoped that drafting of doctors for the army and navy will not be necessary, but drafting them for veterans' hospitals would be a definite example of governmental autocracy.

The medical profession agrees heartily that the veterans are entitled to the best of medical care for disabilities resulting from their service to their country. That large percentages of the inmates of veterans' hospitals are being treated for conditions unrelated to service is, and has been for years, a source of irritation to the medical profession.

According to present regulations, hospital beds in veterans' hospitals are allocated to veterans with non-service-connected ills when available. Possibly, the solution of the dilemma which seems to be confronting the Veterans Administration will be, of necessity, a more strict limitation of hospital beds to service-connected cases.

The private practice of medicine is facing a serious situation if, with the provision of additional veterans' hospitals and care being provided for some 8 million veterans for both service-connected and non-service-connected disabilities, this large block of the population is to be withdrawn from the private field. The situation will be even more serious if an attempt is made to include hospital care for the families of veterans. This would add some 50 million more to the number eligible for hospital care at government expense.

Of course, the lack of veterans' hospital facilities to care for the large number of veterans suffering from service-connected disabilities resulted in the happy solution whereby the services of private physicians were employed. This has been a source of some income to private physicians, particularly in the outpatient care of veterans suffering from service-connected disabilities. Outpatient care in the large centers of population being in large measure supplied by government-operated clinics, physicians outside the centers have profited more than those in the cities. It is said that the time consumed by veterans in attending the outpatient clinics operated by the Veterans Bureau has made them less popular than the services rendered for the Bureau by private physicians.

Every effort should be made to forestall the inclusion of the care of non-service-connected disabilities for veterans and their dependents even though the profession at large is used to supply that care. This would place the burden of the medical care of half the population of the country on the shoulders of the taxpayers.

MINNESOTA BLUE SHIELD PLAN

THIS issue contains on page 584 a communication from Mr. Arthur M. Calvin, Executive Secretary of the Minnesota Hospital Service Association, embodying the plan for the proposed Blue Cross—Blue Shield national association which evolved from the conference of representatives of national organizations held in Los Angeles on March 30, 1948.

As stated in an editorial entitled "Proposed Blue Cross-Blue Shield Merger," which appeared in our March issue, considerable opposition has been voiced to the plan of the merger as first proposed. A perusal of the new plan, as outlined in Mr. Calvin's communication, will show that the functions of the proposed national association of the two plans will be carried out by a Board of Governors and an Executive Committee equally representative of the Blue Cross and Blue Shield organizations and the American Hospital and American Medical Associations. It would seem, too, that ample provision will be made so that there will be no danger that the national association will encroach upon the autonomy of the state plans.

The new proposal that the national association of the Blue Cross and Blue Shield plans shall be an association of state plans, and not a large national insurance company, would seem to dispel the criticism that a large national insurance

company is to be formed in competition with private insurance companies. As a matter of fact, private insurance companies and medical associations have a common interest in providing hospital and medical insurance to meet the public demand and obviate the need of compulsory governmental insurance. While the non-profit hospital and medical plans sponsored by the hospital and medical associations have been showing satisfactory progress, the private insurance companies have also been markedly increasing their sale of policies. The medical profession wishes them the best of success, and we would go so far as to wish them godspeed, even if through better organization and insurance know-how they show themselves able to undersell our non-profit organizations. The important point is that hospital and medical insurance shall be widespread enough to meet the need.

At the inaugural dinner of the Minnesota Blue Shield Plan, which is Minnesota Medical Service, Inc., held at the Coffman Memorial Union at the University of Minnesota on April 13, several hundred interested guests heard a number of representatives of hospital, medical and nurses' organizations wish the Minnesota Blue Shield Plans success. The meeting was also addressed by the guest of honor, Dr. Paul R. Hawley, who is the present executive officer of the combined Blue Cross and Blue Shield commissions. Medical and hospital organizations can say "Amen" to the sentiments expressed by the former general.

METHIONINE IN THE TREATMENT OF CIRRHOSIS OF THE LIVER

THE frequent occurrence of cirrhosis of the liver in alcoholics has been explained as due not to the alcohol but to dietary deficiency. In the past, the treatment of cirrhosis has been on the whole futile.

Since attention was called to the value of methionine in the treatment of certain forms of hepatitis due to chemical poisoning, the hope has been expressed that this amino acid might be of some value in the treatment of cirrhosis of the liver. A recent editorial[1] in *The Journal of the American Medical Association* indicates that it has.

Beams and Endicott[2] have reported a short series of cases of cirrhosis in which liver biopsies were taken before and after treatment with high protein diet, crude liver injections and large doses of brewers' yeast—one series receiving 2 to 5 grams of methionine by mouth daily, and the other series not. While all the patients who received the methionine and some of those who did not receive it showed a favorable response, as indicated by histological changes in the liver, and while clinical improvement did not always correspond to improvement in the liver, methionine was given the credit for the better outcome in the patients treated.

In the nine patients who received the treatment supplemented with methionine, all showed histologic changes in the liver indicating a favorable response to the treatment. Five of them showed clinical improvement also, and three have remained well from one to two years. Two of the five patients ate poorly, continued to use liquor, and had recurrences after seven and twelve months, respectively.

The reported favorable results from the outlined treatment including methionine indicates further clinical trial.

1. Editorial. Hepatic Cirrhosis treated with methionine. J.A.M.A. 136:934, (April 3) 1948.
2. Beams, A. J. and Endicott, E. T.: Gastroenterology. 9:718, 1947.

MINNESOTA DEPARTMENT OF HEALTH

The Section of Medical Laboratories of the Minnesota Department of Health continues to offer microscopic, bacteriologic, and serologic examinations for all infectious communicable diseases, reports Dr. Paul Kabler, chief of that section. Recently, additional tests have been made available for virus and rickettsial diseases, primarily the encephalidites and pulmonary infections.

For best results in diagnostic tests for virus and rickettsial diseases, the laboratory requires a specimen collected during the acute phase of disease and another specimen collected during the convalescent stage, usually three to four weeks later. These two specimens are essential for comparative purposes, because it is the increase of antibody content during the intervening period that is of prime diagnostic significance. A full vial of blood should always be submitted for serologic tests.

"Submission of adequate specimens for laboratory diagnosis will greatly assist both the practicing physician and the Section of Medical Laboratories," says Dr. Kabler. "Physicians will receive better service if specimens sent to the laboratories are collected carefully, in adequate amounts, and mailed promptly, accompanied by the data card completely filled out with the test desired plainly stated. The chance for mis-diagnosis is augmented when specimens are collected too hastily or kept too long before they are mailed."

The laboratories of the State Department of Health constitute one of the oldest sections of the organization.

A laboratory was operated by Dr. Charles N. Hewitt, first state health officer, in the early days of the Health Department at Red Wing, Minnesota. In 1893, the laboratory work of the Board of Health was moved to the University Campus, and since that time the work has continued to be done there. However, the Health Department laboratories have no administrative connection with the University.

CANCER—A NEW MEDICAL JOURNAL

A new medical journal entitled *Cancer,* to be published by the American Cancer Society, will appear shortly. As the title intimates, the journal will be devoted to the subject of cancer from a surgical, medical, radiological, public health and educational standpoint and will publish original articles of high calibre only.

A long list of scientists representing clinical medicine and research makes up the Editorial Advisory Board, with Fred W. Stewart, M.D., acting as editor, Harry E. Ehrlich, M.D., assistant editor, and Douglas A. Sunderland, M.D., as abstract editor.

It is felt that although two important cancer journals now exist, they are largely devoted to reports of experimental laboratory research, and clinical papers are scattered among numberless other journals. *Cancer* will be devoted to the subject of cancer with major emphasis on clinical reports and experimental studies of particular value to those interested in the subject.

Original papers may be submitted to the editor, Dr. Fred W. Stewart, 444 East 68th Street, New York 21, New York.

WARNING—CUTTER LABORATORY INTRAVENOUS PREPARATIONS CONTAMINATED

In late April, hospitals were notified by the AMA to discontinue use of Intravenous solutions manufactured by Cutter Laboratories, Berkeley, California, because of contamination discovered in one batch of glucose solutions for intravenous use. Discovery of contamination in another and entirely different glucose solution, dextrose 10 per cent in Ringer's solution, has led the company to warn hospitals and physicians not to use any of the Cutter preparations intended for intravenous use until the thus far unsolved source of contamination has been found. Even the flasks made by the Cutter Laboratories should not be used. Products should be returned to the laboratory.

TUBERCULOSIS AND ERYTHEMA NODOSUM

Even if not more than two-thirds of the cases of erythema nodosum are associated with a tuberculous primary infection, it is obvious that every tuberculin-positive case must be treated in private practice as a possible expression of tuberculosis until thorough examination has shown that this possibility can be ruled out. The best guide to the etiological diagnosis seems to be the vesicular tuberculin reaction.—Hans Jacob Ustvedt, M.D., *Tubercle,* December, 1947.

In Memoriam

WARREN FETTERLY

Dr. Warren Fetterly of Minneapolis, formerly of Virginia, Minnesota, was found dead in his garage April 6, 1947. Death had been caused by carbon monoxide poisoning, presumably the day before.

Dr. Fetterly was born in Minneapolis, March 7, 1903. He obtained a B.S. degree from Hamline University in 1926 and an M.D. degree from the University of Minnesota in 1929. He interned at St. Mary's Hospital in Duluth and was associated with Dr. G. R. Dunn in Minneapolis seven years before joining the Malmstrom-Sarff Clinic in Virginia in 1937.

He is survived by his wife.

LEO A. HILGER

Dr. Leo A. Hilger, of Saint Paul, died December 30, 1947, after several weeks' illness.

Dr. Hilger was born in Pierre, South Dakota, on January 21, 1887, and came to Saint Paul in 1896. His early education was at Cretin High School and St. Thomas College, and he was graduated from Marquette Medical School in 1913.

He began practice in Saint Paul in 1914 after an internship in St. Joseph's Hospital. He was associated with his brother, Dr. Dave Hilger, and for many years worked with Dr. Fred Plondke at St. John's Hospital. He was Chief-of-Staff at St. Joseph's Hospital and for twenty-five years devoted his time and his excellent surgical knowledge caring for the indigent sick at the Ancker Hospital.

Dr. Hilger was a member of the Ramsey County Medical Society, Minnesota State Medical Association, American Medical Association, Saint Paul Surgical Society, a fellow of the American College of Surgeons, and Chief Surgeon of the Omaha Railway.

He is survived by his wife, Mary, three children and one sister and four brothers.

Edward C. Gibbs, M.D.

EDWARD H. NELSON

Dr. Edward H. Nelson of Chisholm, Minnesota, died at the Hibbing General Hospital on March 29, 1948, following a long illness.

Dr. Nelson was born in Minneapolis, March 30, 1875. He obtained his medical degree from Hamline Medical College in 1903 and interned at St. Barnabas Hospital in Minneapolis.

He joined the staff of Rood Hospital, now the Mesaba Clinic, on March 25, 1904. For the past eight years, he had been manager of the Mesaba Clinic.

Dr. Nelson served as mayor of Chisholm in 1910, 1911, 1918 and in 1929, and for twenty-one years was a member of the board of education at Chisholm.

He was a member of the Masonic Lodge and the Elks. In 1940, he was honored at a testimonial dinner

tendered by the Junior Chamber of Commerce of Chisholm.

He was a member of the St. Louis County Medical Society, the Minnesota State Medical Association, and American Medical Association.

On July 26, 1905, Dr. Nelson married Marie Saucier of Minneapolis.

He is survived by his wife and two daughters, Lucille Nelson of Minneapolis and Mrs. Irving Coryell of Chisholm, and a half brother, Dr. Kenneth R. Nelson of Boston.

LEO P. MOONEY

Dr. Leo P. Mooney, practicing physician of Graceville, Minnesota, since 1936, died of a heart attack on March 12, 1948. He had been ill two weeks.

Dr. Mooney was born at Madison, Minnesota, October 4, 1896. He obtained his medical education at the University of Minnesota, graduating in 1926. Following an internship at St. Mary's Hospital, Minneapolis, he practiced at Marble, Minnesota, from 1927 to 1936, when he moved to Graceville.

He was a member of the West Central Minnesota Medical Society, the Minnesota State Medical Association and American Medical Association.

HARRY OERTING

Dr. Harry Oerting was born in Saint Paul, Minnesota, in 1887. His preliminary education was completed in Saint Paul, and he received his Doctor of Medicine degree from Harvard University in 1917. He served as first lieutenant in World War I.

Dr. Oerting was very active in both medical and other scientific circles. He was a member and a former president of the Ramsey County Medical Society, a member of the Minnesota State Medical Association and the American Medical Association. He was also a member of the Central Society for Clinical Research. He was assistant clinical professor of medicine at the University of Minnesota, and he was certified by the American Board of Internal Medicine. He held memberships on the staffs of Ancker Hospital, the Charles T. Miller Hospital, St. Joseph's Hospital and St. Luke's Hospital. He was also a member of many lay organizations.

Dr. Oerting died after a brief illness on January 30, 1948, as a result of a coronary thrombosis. He is survived by his wife, Marie Johnson Oerting, and a daughter, Dorothy Oerting.

JOHN F. BRIGGS, M.D.

GEORGE BROSIUS WEISER

Dr. George B. Weiser, of New Ulm, died March 23, 1948, after an illness of several months. He was ninety years of age.

Dr. Weiser was born at Dalmatia, Pennsylvania, on September 7, 1857. He graduated from the Jefferson Medical College in 1897. He later took a supplementary course at the Philadelphia School of Anatomy and a special course in skin diseases under Professor J. V. Shoemaker in Philadelphia.

He began practice in McKees Half Falls, Pennsylvania, in March, 1879, but came to New Ulm in 1893. He had practiced over sixty years when he retired several years ago. Dr. Weiser had an active, long and useful life. He was a member of the board of education of New Ulm from 1898 to 1921 and president of the board for twenty years, a member of the first advisory commission of the Minnesota State Sanatorium for Tuberculosis, a member of the Minnesota State Board of Medical Examiners from 1917 to 1933, and twice president of the Board. He served as Associate Editor of MINNESOTA MEDICINE from 1918 to 1937. He was a member and former president of the Redwood-Brown Medical Society, and a member of the Minnesota State Medical Association and the American Medical Association. He was chairman of the Brown County Republican Committee from 1914 to 1932, a member of the Brown County Exemption board during World War I, and public school physician for many years. He was president of the Brown County Bank for a number of years, vice president of the Essig State Bank, director of the Citizens State Bank and the State Bond and Mortgage Company.

On October 2, 1890, Dr. Weiser was married to Sarah C. Schoch at Selingsgrove, Pennsylvania. Mrs. Weiser died on February 24, 1948. One daughter, Mrs. C. J. Ekelund of Pontiac, Michigan, and three granddaughters survive.

Several years ago, Dr. Weiser and Mr. Jacob Klossner, Jr., were honored by the members of Charity Lodge on the occasion of their fiftieth anniversary as members of the Masonic order. He took a great interest in the affairs of the local masonic fraternity and upon the fiftieth anniversary of the Charity Lodge, penned the history of the local fraternal group.

CLAUD WHITING WOODRUFF

Dr. C. W. Woodruff, practicing physician of Chatfield, Minnesota, for forty-three years, died March 24, 1948, at Pomona, California, after a long illness. He was seventy-one years old.

Dr. Woodruff was born at Elgin, Minnesota, October 17, 1876. After attending the University of Minnesota for three years, he graduated from Rush Medical College in 1901.

He practiced at St. James for a few months, then moved to Wykoff, Minnesota, and in 1905 came to Chatfield.

Dr. Woodruff served in the army medical corps during World War I and was chairman of the World War II Fillmore County draft board during its existence. He was an active member of the Olmsted-Dodge-Fillmore-Houston County Medical Society, the Minnesota State Medical Association and American Medical Association. He was also a member of the Masonic fraternity, including the Shrine, Knights Templar and Scottish Rites. He was also chairman of the Board of Trustees of the Chatfield Presbyterian Church for many years.

On October 29, 1902, Dr. Woodruff married Dora Dunn of Elgin. Mrs. Woodruff died on May 5, 1947, and a son, Paul, died in August, 1939. Surviving him is his daughter, Helen, who was with him in California when he died.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

IMPARTIAL AGENCY VETOES COMPULSORY HEALTH INSURANCE

A significant statement on medical care for the individual prepared by the Brookings Institution of Washington, D. C., an impartial agency, has been released. It points out quite objectively certain defects in the compulsory system now being proposed for our national health program.

It would seem unwise at this time, the Brookings Institution concludes, to substitute by national law for the present system, a system of compulsory health insurance which would have the "unfortunate tendency to freeze policies and eventually retard medical progress."

The statement follows a study of the national health picture made at the request of Senator H. Alexander Smith of New Jersey, who, in his position as chairman of the subcommittee on health of the Senate Committee on Labor and Public Welfare, has been investigating proposed federal health legislation.

Particularly under scrutiny have been S. 1320 (successor to the Wagner-Murray-Dingell bill of 1946) and S. 545, the Taft-Smith-Ball-Donnell bill.

Present System Basically Sound

That the present system of providing health care is basically sound is one of the most important conclusions drawn in the Brookings report. Proceeding from that point it discusses objectively some of the weak points and flaws that exist and suggests possible corrective measures; compulsory health insurance as a solution is flatly vetoed.

The medical profession has always maintained that no other nation in the world has better health than that enjoyed in the United States and that a system of medical service with that kind of record should not be scrapped. This point is emphasized in the Brookings report.

The report compares health in the United States with that of other countries—as their health conditions existed before being thrown off base by the war—and concludes that "no great nation in the world has among its white population better health than prevails in the United States. A few small homogeneous countries such as New Zealand with respect to its white population are slightly ahead of the United States as a whole, but certain states of the United States with larger populations equal them."

A greater progress in the application of medical and sanitary science than any other country is also noted. Reference is made to low mortality and morbidity rates for the infectious diseases and an increase in life expectancy, and it is shown that this general trend toward improvement is apparently going to continue.

Draft Statistics No Argument

Considering the ferment over the rate at which young men were rejected from the draft and the way the figures have been used to show evidence of failing American health, it is interesting that the Brookings report declares that "the so-called draft statistics are unreliable as a measure of health of the nation and cannot be used to show the extent of the medical needs of the country as a whole."

No argument to support this contention has been released at this time. The present report is a preliminary to a more detailed one to be presented later and to include discussion and data upon which the conclusions are based. In preparing the report, Drs. Lewis Meriam and George W. Bachman, two of the Institution's senior staff members, both of whom are familiar with government service, medical research and public health, analyzed the major issues involved in the question of changing the present system through examining extensively the literature in the field. They also examined statistics, government administrative policies and procedures, population trends and social and economic problems related

to health and drew upon experience in administration and research in the field of public health, disease control and medical relief. No attempt, however, is made to deal with strictly medical problems.

Suggest Different Approach

The Brookings Institution report attacks some of the solutions being advanced for present health problems. For example, the subsidy for areas which cannot support adequate public services, the report says, will not do the job. This problem of providing health work, education, highways, etc., for extremely poor rural areas with little or no resources must be handled with an entirely different approach, perhaps importing newer or better economic activities or moving the people to areas less bleak and less expensive to administer. As for health insurance, compulsion won't do either, the report shows. *People won't be any more able to pay a health tax if it is forced upon them than they would be ordinarily able to budget for medical bills on a voluntary basis.* The alternative for those who *can* pay is to let them decide for themselves how much health care they are willing to pay for and then to take out insurance if they so desire. For those unable to pay, no matter what system is used, provision will still have to be made for them through public funds or charity, it is pointed out.

Other arguments against compulsion are advanced. It is shown that compulsory health insurance would mean tight government control over people and agencies in medical and health work. This field would be harder to manage than any other yet entered by the government, requiring thousands of employes. Such control would tend to discourage initiative and development. Then the whole question of the difficulty of eliminating politics comes in, as does the danger of government interference threatening the doctor-patient relationship, which would ultimately affect the quality of medical service. Costs of medical care would skyrocket to make up for the administrative burden. What it boils down to is that the people will be paying *more* for an *inferior* product.

Compulsion Won't Meet Demand

Compulsory health insurance is not going to create services where none exist, nor will it stretch facilities, the report points out. There are not enough facilities or trained workers—doctors, nurses, dentists—to meet the demand for service that a national program of the type proposed would stimulate.

Methods of paying physicians under such a plan were also studied by the Institution. Of the three known methods—fee for service, per capita and salary, none can be fitted into the system without socializing the profession. Fee for service would be least likely to shackle the profession, but it would be difficult to administer. Difficult to handle also would be the per capita system, which calls for a higher degree of socialization. Almost complete socialization, the report says, would come from the salary system.

Could a country once committed to compulsory health insurance turn back if headed for the rocks? Wouldn't it rather have to patch up defects with even more rigid federal control and administration? These questions are left to the health insurance advocates by the Brookings Institution. The report doesn't ask that they be put to a test; results might be disastrous. Instead it makes a series of recommendations—(1) Leave it up to the individual states to decide whether compulsory health insurance should be adopted or the health professions should remain free; (2) Devote resources and energies of the federal government to research in public health, health education at school level, teaching preventive medicine, assisting in providing physical facilities and training personnel and caring for indigents; (3) Leave adult education campaigns for control and prevention of disease to national, state and local voluntary organizations. It must be remembered, the report emphasizes, that *good health is not exclusively a matter of medical care.*

Governors Oppose Compulsion

In his attempts to get at the current opinions from persons other than those connected with health on national health legislation, Senator Smith not only called in the Brookings experts, but he also put the question to the governors of the forty-eight states. Results should be heartening to physicians—not a single governor favored federalizing medicine.

Senator Smith outlined the two proposals now before Congress, S. 1320 and S. 545. Of the thirty-nine governors reporting, all of them turned thumbs down on S. 1320 which calls for payroll taxes and other taxes to pay for an over-all medi-

cal program by the government. S. 545, which would allot federal grants to states in order that they might develop their own programs was approved by twenty-five of the governors. Five did not like either measure; eight indicated no preference. Nine governors did not reply.

BRITISH DOCTORS PROTEST INCREASED SOCIALIZATION

Attempts by the British Labor Government to push through a program of increased state control over medicine has met with severe opposition. British doctors have voted to boycott the universal free medical service plan, scheduled to take effect July 5, 1948.

What the British Medical Association objects to most are the features which make the physicians salaried servants of the state; take away their rights to choose the form, place and type of work they prefer; and do not give the medical profession adequate representation in the administration of the program.

The program was worked out according to principles laid down by Sir William Beveridge and will be directed by Minister of Health Aneurin Bevan. Not only was the British medical profession not consulted in the development of details, but on the eve of the plebiscite held by the doctors to determine whether they would participate, Mr. Bevan charged the British Medical Association with conspiracy and sabotage.

Conflicts with Standards

The new national health service plan conflicts with the traditions and standards of medicine, said the doctors as they voted against it 24,340 to 4,084. Furthermore, they maintain that they have been heretofore servants of their patients and do not wish to take on the additional burden of serving a top-heavy state plan.

"Public safety demands that the individual doctor shall be free to certify what he finds in his patient without fear of government influence." This statement was made by the Council of the British Association; it reflects the majority opinion of all British doctors.

The present move to nationalize medicine in Britain is not a sudden development. It has been on the way since 1942. Final enactment is due to the efforts of the present labor regime. The plan includes nationalization of all hospitals; doctors will be compelled to get government approval to hospitalize patients. The state will dole out all supplies, drugs and equipment. The pattern of socialism is followed through once more—the tendency it has to expand controls until the entire system is taken over.

WORLD HEALTH ORGANIZATION FAILS TO GET U. S. SUPPORT

With the blessing of the American Medical Association, the American Public Health Association, and practically every public health organization in the United States, the World Health Organization was born in New York City in July, 1946. This great charter for world health has been bypassed by the United States.

The Senate passed the bill to make the United States a member, but for some reason the House of Representatives tabled a bill to aid in establishing the WHO. The United States has taken the lead in supporting world-wide efforts at disease control, preventive medicine, nutrition, research, sanitation, housing. It seems strange that our lawmakers would thus neglect or ignore these very aims.

At the time of its founding, those who worked out the plans believed that the world was never more in need of a World Health Organization. The objectives were to secure the highest possible level of health for all people, to help the world back to health and sanity. It was hoped sincerely that these aims would be accomplisheed. Yet, how can they be accomplished without the support of this country?

The Medical Society of the State of New York has sent to Washington a resolution summarizing the need for an agency to promote health and to urge immediate rescinding of the action by the House of Representatives so that the United States can assume its proper role in assisting international co-operation for health.

O'BRIEN MEMORIAL PROFESSORSHIP

The Minnesota Division of the American Cancer Society at its April meeting established a full professorship in cancer research at the University of Minnesota, dedicated to the memory of Dr. William A. O'Brien, who was president of the division for ten years before his death. A $5,000 fellowship which was established by the division three years ago, and which is held at present by Dr. Robert A. Huseby, will be extended to the full professorship.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary
230 Lowry Medical Arts Building
Saint Paul, Minnesota

Two Women Plead Guilty to Abortion Charge

Re State of Minnesota vs. Alma D. Peterson and Laura M. Finn.

On April 12, 1948, Alma D. Peterson, fifty-eight years of age, 6 Spruce Place, Minneapolis, entered a plea of guilty to an information charging her with the crime of abortion. On the same date, Mrs. Peterson also pleaded guilty to an information charging her with two prior convictions. Following a statement of the facts to the Court, Mrs. Peterson was sentenced to serve one year in the Minneapolis Women's Detention Home. Judge Hall told Mrs. Peterson that she would have to serve the entire year and that her sentence would not be shortened by the Court.

Mrs. Peterson and the defendant, Laura M. Finn, forty-five years of age, 9 South Ninth Street, Minneapolis, were arrested on March 10, 1948, by Minneapolis police officers following the hospitalization of a twenty-four-year-old unmarried Minneapolis woman. The patient was suffering from the after effects of a criminal abortion. The case was promptly reported to the Minnesota State Board of Medical Examiners, and the subsequent investigation resulted in the arrest of both defendants. The patient stated that she had contacted the defendant Finn, who, in turn, arranged to have the defendant Peterson actually perform the abortion. The abortion was performed by means of a catheter, and the sum of $100 was paid to the defendant Finn. Mrs. Finn retained $70.00 and gave the defendant Peterson $30.00 for doing the abortion.

The defendant Finn entered a plea of guilty on March 22, 1948, to an information charging her with the crime of abortion. Because of the fact that Mrs. Finn had a good record prior to her arrest, she was sentenced to a term of not to exceed two years in the Women's Reformatory at Shakopee by the Hon. Levi M. Hall, Judge of the District Court, and placed on probation for two years. The case against Mrs. Peterson was continued to April 12, on which date it was disposed of as stated above. The Court refused to place the defendant Peterson on probation for the reason that Mrs. Peterson was convicted of criminal abortion in the District Court of Hennepin County, on December 8, 1934, and again on February 7, 1944. In each of the prior cases, Mrs. Peterson was placed on probation. Neither of the defendants has any medical training.

CHRISTIAN MEDICAL SOCIETY

The annual convention of the Christian Medical Society will be held on June 25 and 26 in the Illini Building, 715 South Wood Street, Chicago, Illinois. An organization of physicians and medical students, the society recognizes no denominational barriers. With a membership exceeding 500, the organization has student members on more than thirty medical campuses and active groups on more than half of those campuses.

Reports and Announcements

AMERICAN CONGRESS OF PHYSICAL MEDICINE

The American Congress of Physical Medicine will hold its twenty-sixth annual scientific and clinical session September 7, 8, 9, 10 and 11, inclusive, at the Hotel Statler, Washington. D. C. Scientific and clinical sessions will be given the days of September 7, 8, 9, 10 and 11. All sessions will be open to members of the medical profession in good standing with the American Medical Association.

In addition to the scientific sessions, the annual instruction courses will be held September 7, 8, 9 and 10. These courses will be offered in two groups. One set of ten lectures will be based primarily on physics and physiology, and attendance will be limited to physicians. One set of ten lectures will be more general in character and will be open to physicians as well as to physical therapists. The physical therapists must be registered with the American Registry of Physical Therapy Technicians. Full information may be obtained by writing to the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

CHICAGO MEDICAL SOCIETY POSTGRADUATE COURSES

Two postgraduate courses will be offered to physicians of the country in September by the Chicago Medical Society. The first course, Hematology and Neurology, will be given September 13 to 18, and the second, Cardiovascular and Respiratory Diseases, will be held September 20 to 25.

Sessions will be held in Thorne Hall on the Northwestern University Medical School campus. The faculty for the courses will be comprised of an outstanding group of teachers from all sections of the United States.

Further information may be secured from the Chairman, Committee on Postgraduate Medical Education, Chicago Medical Society, 30 North Michigan Avenue, Chicago 2, Illinois.

FREEBORN COUNTY SOCIETY

Tuberculosis was the subject for discussion at a meeting of the Freeborn County Medical Society in Albert Lea on March 18. Dr. Karl Pfuetze, of Mineral Springs Sanatorium at Cannon Falls, as the principal speaker, discussed results of x-ray surveys carried out last fall and reviewed the use of streptomycin in the treatment of tuberculosis.

Guests at the dinner included Dr. Henri Duloud of France and Dr. Chih Li Chu of China, both of whom are engaged in special work at the Cannon Falls sanatorium.

MINNESOTA STATE MEDICAL ASSOCIATION

Ninety-Fifth Annual Session

Minneapolis Auditorium, Minneapolis, Minnesota
June 7, 8, and 9, 1948

ANNOUNCEMENTS

Sectional Program—This year's program is again divided into two sections to be conducted simultaneously. The general scientific assembly will convene each day in the ground floor lecture hall to the left of the exhibit hall. Section meetings will be held on the mezzanine floor off the main corridor leading to the lecture hall.

Scientific Cinema—Scientific motion pictures will be shown in a room to the right of the exhibition hall before each morning and afternoon session, at the conclusion of the Monday and Tuesday sessions, and at each intermission. Provided by the Medical Film Guild, which has produced several research projects this year, each film represents a postgraduate course in the specialty covered. Of note is "Management of the Failing Heart," "A Clinic on Deafness," "Arterial Blood Pressure—the Instruments, Technique and Physiology," "Hypothyroidism," and many others. These films are available to the local medical societies at no charge; costs are defrayed by grants for postgraduate instruction. Projection service is also included at no charge.

Round Table Luncheons—A series of twenty-one Round Table Discussion Luncheons has been arranged for this meeting at Hotel Radisson. A set of ten luncheons will be held on Tuesday and ten on Wednesday; one luncheon is scheduled for Monday. Tickets may be purchased in advance for these luncheons, all of which are held at 12:15 p.m. Lists of subjects and leaders are printed in the program and on the reservation cards mailed with the program. Attendance at each luncheon is limited to *thirty;* late comers are accommodated according to their choice if limits have not already been reached. Tickets $2.00, tips included.

Public Health Meeting—A special conference entitled "An Unfinished Job" will conclude the convention program on Wednesday afternoon, June 9. Distinguished guest speakers will present a thorough and frank discussion of health needs, showing medicine's part and the interplay of other factors influencing health and welfare. Invited will be members of allied health organizations, social welfare workers, school and government authorities and representatives from farm, labor, professional and civic groups.

Medal—The Southern Minnesota Medical Association will again award a medal to the individual physician presenting the outstanding scientific exhibit. The award will be made at the banquet Tuesday evening, June 8, at Hotel Radisson.

Fifty Club—Tribute will be paid to members who this year have completed fifty years of practice in Minnesota by election to Minnesota's "Fifty Club." Candidates will be honored at the Banquet Tuesday evening and will be presented with lapel buttons and certificates at that time.

Technical Exhibits—A large and varied array of technical exhibits will be on display in the Exhibition Hall of the Minneapolis Auditorium. Every convention visitor will want to visit the booths for the opportunity, which they provide, of looking over what's new in the line of physicians' supplies and equipment, pharmaceuticals, medical books, et cetera; also, the revenue from sale of exhibit space makes possible the high quality of scientific program which characterizes our Minnesota meetings.

Woman's Auxiliary—Physicians' wives attending the meeting may secure programs for the business and social sessions of the Woman's Auxiliary at the Women's Registration Desk on the mezzanine floor of Hotel Radisson. All visiting women are cordially invited to attend the special events arranged by the hostesses of the Hennepin County Medical Auxiliary. Among these is a tea Monday afternoon at the Women's Club of Minneapolis, 410 Oak Grove Street, and the Annual Meeting and Luncheon at 10 a.m. and 1 p.m., respectively, at Hotel Curtis. Visiting women may attend the Breakfast at 10 a.m. Wednesday, June 9, in the Medical Arts Lounge.

SPECIAL SESSIONS

In addition to the general sessions to be held on Monday, Tuesday and Wednesday in the general lecture hall on the ground floor to the left of the exhibition hall, there will be five special section meetings in the mezzanine lecture hall. These will be held during the morning of each of the three convention days and Monday and Tuesday afternoons. Intermission periods will be observed from 10:15 to 11 a.m. and again from 3:15 to 4 p.m. at each session so that those who attend may visit exhibits, demonstrations and the scientific cinema.

Monday, June 7

9 a.m.—Symposium on Surgery of Emergencies (Orthopedic and Fracture Surgery)

2 p.m.—American College of Chest Physicians, North Midwest Chapter

Tuesday, June 8

9 a.m.—Symposium on Research Problems

2 p.m.—Minnesota Academy of Ophthalmology and Otolaryngogoly

Wednesday, June 9

11 a.m.—Minnesota Heart Association

CLINICS

A special feature at this meeting is a series of clinics at several Minneapolis hospitals, conducted by staff members, arranged for Tuesday and Wednesday. *Admission will be by ticket only; free tickets procurable at the Registration Desk, Auditorium.*

Tuesday, June 8

St. Barnabas Hospital—920 South 7th Street

8 a.m.—A Demonstration of Pre- and Post-Operative Parenteral Nutrition in Surgical Patients, Carl O. Rice, *et al.*

9 a.m.—A Demonstration of Caudal Anesthesia in the Obstetric Patient, John T. Moehn and O. F. Robbins

10 a.m.—A Demonstration of a New Principle in the Management of Heart Disease, Arthur Kerkhof, *et al.*

Asbury Hospital—916 East 15th Street

8 a.m. to Noon
- —A Demonstration of Varicose Vein Ligation, H. O. McPheeters, *et al.*
- —Gall Bladder Surgery, Henry Hoffert
- —General Surgery, Stanley Maxeiner, *et al.*
- —Fluorescein Visualization of Peripheral Vascular Circulation, H. A. Alexander

Wednesday, June 9

Abbott Hospital—110 East 18th Street

8 to 11 a.m.—Rectal Operations, W. A. Fansler, J. K. Anderson, *et al.*

Northwestern Hospital—810 East 27th Street.

9 a.m.—Pediatric Techniques, E. S. Platou, *et al.*

10 a.m.—Clinical Conference, Medical Staff, J. C. Miller, *et al.*

Veterans Hospital—54th Street and 48th Avenue South (Fort Snelling)

9:30 to 11 a.m.—Neurological Rehabilitation, Andrew J. Leemhuis and Louis C. Jenson, Building 55, Station 50 (Fort Snelling)

2 to 3 p.m.—Peripheral Vascular Diseases, Frank W. Quattlebaum, Conference Room, Building I (Veterans Hospital)

MOVIES

A series of special movies will be shown, by arrangement with the Local Committee, at various times during the convention at the Auditorium in Booth S-26.

Alimentary Diverticula—Horace G. Scott, Minneapolis

Facia Transplant Hernia Repair—Hamline A. N. Mattson, Minneapolis

Lumbar Ureterotomy for Stone—Frederick E. B. Foley, St. Paul

Progress of Patients with Poliomyelitis, Treated from 1946—Frederick J. Kottke, *et al,* Department of Physiology, University of Minnesota

Thyroidectomy—Martin Nordland, Minneapolis

Tourniquet Amputations—Stanley R. Maxeiner and C. D. Adkins, Minneapolis

Vein Ligations—H. O. McPheeters, Minneapolis

DEMONSTRATIONS

There will be a series of five obstetric manikin demonstrations arranged by the Committee on Maternal Health under the auspices of the Minnesota State Department of Health. Three of these will be presented at Round Table Luncheons, at 12:15 p.m. Monday, Tuesday and Wednesday, Hotel Radisson; the other two will be presented at 5:15 p.m. Monday and Tuesday in the Lecture Hall on the Mezzanine Floor at the Minneapolis Auditorium.

The first manikin demonstration will be given at 12:15 p.m., Admiral Room, Hotel Radisson, by Harold L. Gainey, Assistant Professor of Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City, who will repeat the demonstration at 5:15 p.m. that same day at the Auditorium.

On Tuesday, June 8, the demonstrator will be Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha; the first demonstration to be given at 12:15 p.m. Admiral Room, Hotel Radisson, and again at 5:15 p.m. at the Auditorium.

John E. Faber, Department of Obstetrics and Gynecology, Mayo Clinic, Rochester, will perform the final demonstration at 12:15 p.m., Spanish Room, Hotel Radisson, Wednesday, June 9.

GUEST SPEAKERS

We are indebted to the following societies and organizations for guest speakers at this meeting:

The Minnesota Academy of Ophthalmology and Otolaryngology—Speaker, Dean McAllister Lierle, Professor of Otolaryngology, State University of Iowa College of Medicine, Iowa City.

The Minnesota Department of Health—Obstetric manikin demonstrators, Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha; and Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City.

Minnesota Medical Service, Inc.—Speaker, Robert L. Novy, President, Michigan Medical Service, Inc., Detroit.

The Minnesota Radiological Society—Speaker, Paul Chesley Hodges, Professor of Radiology, University of Chicago, who will deliver the annual Russell D. Carman Memorial Lecture in Radiology.

The Minnesota Society of Clinical Pathologists—Speaker, Benjamin J. Clawson, Professor of Pathology, University of Minnesota, who will present the annual Arthur H. Sanford Lecture in Pathology.

The Northern Minnesota Medical Association—Speaker, Michael L. Mason, Associate Professor of Surgery, Northwestern University Medical School, Chicago.

The Northwest Pediatrics Society—Speaker, Russell J. Blattner, Professor of Pediatrics, Baylor University College of Medicine, Houston, Texas.

Other visiting speakers at this meeting:

The Honorable Joseph H. Ball, Senator from Minnesota, Washington, D. C.

John O. Christianson, D.Sc., Superintendent, University of Minnesota School of Agriculture, St. Paul.

Morris Fishbein, Editor, *Journal of the American Medical Association,* Chicago.

Erle Henriksen, Associate Professor of Gynecology and Consulting Pathologist, University of Southern California, Los Angeles.

Walter G. Maddock, Northwestern University Medical School, Chicago.

Ovid Otto Meyer, Chairman, Department of Medicine, University of Wisconsin, Madison.

GOLF

The Annual Golf Tournament of the Minnesota State Medical Association will be held at the Interlachen Country Club, Minneapolis, with tee-offs at 11 a.m. and 2:30 p.m. Details are being arranged by a committee, chairman of which is Dr. L. O. Doyle, Minneapolis. All medical golfers are being invited to enter and compete for the attractive prizes that have been donated.

HOBBY SHOW

The Physicians' First Annual Hobby Show will be held at the Minneapolis Auditorium all during the convention. A wide variety of interesting articles—representing the avocations of Minnesota doctors—will be on display: samples of wood carving, basket weaving, etchings, sketches and collections of everything from stamps to buttons. All Minnesota physicians may participate. L. G. Idstrom, Minneapolis, is chairman of the committee in charge.

SOCIAL EVENTS

Annual Banquet—The annual dinner for members, guests and their wives will be held at 7. p.m. Tuesday, June 8, in the Ballroom of Hotel Radisson. Nicholas Amtoroff, distinguished Russian physician, author and lecturer, and A. E. Cardle, Minneapolis, President of the Minnesota State Medical Association, will be banquet speakers. Tickets $4.00.

Preceding the Banquet there will be a social hour, from 5 to 6:30 p.m. on Tuesday, June 8, in the Italian Room, Hotel Radisson, arranged by the Entertainment Committee of the Hennepin County Medical Society and Mr. George Ulmer, President, Physicians and Hospitals Supply Company and the Ulmer Pharmacal Company of Minneapolis.

"A Midsummer Dream"—At 8 p.m. Monday, June 7 in the Ballroom of Hotel Radisson, the Dayton Company of Minneapolis, by arrangement with the Hennepin County Medical Society, will present a revue of fashions for summer, 1948, with a background of music. This will be followed by an evening of dancing. Music will be provided by Fred Oldre and his orchestra.

American College of Chest Physicians, North Midwest Chapter, Luncheon—At Noon Monday, June 7, Room 118, Hotel Radisson, chest physicians will hold a luncheon meeting. Reservations should be made in advance with S. S. Cohen, Oak Terrace.

Medical Women's Luncheon—The American Medical Women's Association, Minnesota Branch, will hold a luncheon meeting at the Curtis Hotel, 12:30 p.m. Monday, June 7, to which all women physicians are cordially invited. For reservations communicate with Nora Winther, 512 Medical Arts Building, Minneapolis.

Medical Veterans of World War II will meet at a luncheon at 12:30 p.m. Monday, June 7, at Hotel Radisson. Charles H. Mead, Jr., 815 Fidelity Building, Duluth, is in charge of advance reservations.

Minneapolis General Hospital Surgical Residents Society will hold their annual dinner for members and wives in the Admiral Room of Hotel Radisson, at 6 p.m. Monday, June 7. Advance reservations are to be made with Albert T. Hays, 1149 Medical Arts Building, Minneapolis, MAin 7458.

The Minnesota Society of Clinical Pathologists will hold a luncheon meeting 1 p.m. Wednesday, June 9, at the Leamington Hotel. For reservations contact Kano Ikeda, Miller Hospital, St. Paul.

Nu Sigma Nu Annual Get-Together—There will be a reunion of members of the Nu Sigma Nu Medical Fraternity at the Minneapolis Club for cocktails, dinner, and a social evening, on Monday, June 7, beginning at 5:30 p.m. Notify Charles N. Hensel, 613 Lowry Medical Arts Building, St. Paul, if you plan to attend.

Phi Beta Pi Medical Fraternity—All Phi Bets from every chapter are invited to a luncheon meeting at 12:30 p.m. Tuesday, June 8, at the Curtis Hotel. Plans will be announced later and tickets will be on sale at the Registration desk at the Auditorium. Arrangements are being made by J. K. Anderson, 1829 Medical Arts Building, Minneapolis, and F. F. Wipperman, 1921 Medical Arts Building, Minneapolis.

COMMITTEE ON SCIENTIFIC ASSEMBLY

Members of the Committee on Scientific Assembly who have worked diligently in preparing this year's program are:

A. E. Cardle, M.D., Minneapolis, *General Chairman,* L. A. Buie, M.D., Rochester, and R. R. Rosell, Saint Paul.

Section on Medicine—S. H. Boyer, Jr., M.D., Duluth, and R. V. Sherman, M.D., Red Wing.

Section on Specialties—Francis W. Lynch, M.D., Saint Paul, and C. J. Ehrenberg, M.D., Minneapolis.

Section on Surgery—J. T. Priestley, M.D., Rochester, and D. A. MacDonald, M.D., Minneapolis.

Local Arrangements—Charles E. Proshek, M.D., Minneapolis.

SCIENTIFIC PROGRAM

Monday, June 7

SECTION I—GENERAL SESSION

A.M.

8:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

9:00 *Clinical-Pathological Conference*.....General Lecture Hall
Subject: CARDIOVASCULAR-RENAL DISEASES
Presentation of Cases—Elexious T. Bell, Minneapolis
Differential Diagnoses—Ovid Otto Meyer, Chairman, Department of Medicine, University of Wisconsin, Madison

10:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

11:00 *Panel Discussion:* EMBOLIC PHENOMENA AND THEIR TREATMENT..General Lecture Hall
Moderator: James S. McCartney, Minneapolis
Thrombophlebitis } —Herman O. McPheeters, Minneapolis
Thrombosis }
Dicumarol and Heparin—Nelson W. Barker, Rochester

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Admiral Room, Hotel Radisson
(Luncheon Meeting)
Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City

1:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

2:00 *Panel Discussion:* SURGERY OF INJURIES.....General Lecture Hall
Moderator: Edward T. Evans, Minneapolis
Injuries of the Hand and Forearm—Michael L. Mason, Associate Professor of Surgery, Northwestern University Medical School, Chicago
Bladder Injuries—Baxter A. Smith, Jr., Minneapolis
Abdomino-Thoracic Injuries—Nathan K. Jensen, Minneapolis
Head Injuries—Wallace P. Ritchie, St. Paul
Injuries of the Lower Extremeties—Henry H. Young, Rochester

3:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

4:00 *Russell D. Carman Memorial Lecture*.....General Lecture Hall
Subject: THE ROLE OF X-RAY PELVIMETRY IN OBSTETRICS—Paul Chesley Hodges, Professor of Radiology, Department of Medicine, University of Chicago
Presentation of Speaker: H. Milton Berg, Bismarck, N. D., President, Minnesota Radiological Society

5:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration.....Lecture Hall, Mezzanine Floor
Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City

8:00 "A MIDSUMMER DREAM".....Ballroom, Hotel Radisson
(Listed under Section II—Special Session)

Monday, June 7

SECTION II—SPECIAL SESSION

A.M.

9:00 *Orthopedic and Fracture Surgery*.....Lecture Hall, Mezzanine Floor
Chairman: Edward T. Evans, Minneapolis
Subject: SURGERY OF EMERGENCIES
Abdomino-Thoracic Injuries—Lyle J. Hay, Minneapolis, and Nathan K. Jensen, Minneapolis
Head Injuries—Wallace P. Ritchie, St. Paul

10:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

11:00 *Orthopedic and Fracture Surgery,* (Continued).....Lecture Hall, Mezzanine Floor
Hand and Forearm Injuries—Michael L. Mason, Associate Professor of Surgery, Northwestern University Medical School, Chicago

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Admiral Room, Hotel Radisson
(Luncheon Meeting)
Harold L. Gainey, Assistant Professor, Obstetrics and Gynecology, University of Kansas School of Medicine, Kansas City

1:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

2:00 American College of Chest Physicians, North Midwest Chapter.....Lecture Hall, Mezzanine Floor
Moderator: J. Arthur Myers, Minneapolis
Dangers of Delay in the Diagnosis of Indeterminate Pulmonary Lesions—C. Allen Good, Rochester
Discussion: E. P. K. Fenger, Oak Terrace, and Thomas Lowry, Minneapolis
Some Experiences with Streptomycin in the Treatment of Tuberculosis in the Veterans Administration—William B. Tucker, Minneapolis
Discussion: Russell Frost, St. Paul, and Karl Pfuetze, Cannon Falls

3:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

4:00 *American College of Chest Physicians,* (Continued)...Lecture Hall, Mezzanine Floor
Nebulization Therapy for Pulmonary Diseases—Arthur Olsen, Rochester
Discussion: J. Arthur Myers, Minneapolis, and G. A. Hedberg, Nopeming
Diagnosis of Peripheral Lung Tumors Observed in Chest Survey—David Sharp and Robert Nord, Minneapolis
Discussion: William Roemmich, Minneapolis, and Sumner S. Cohen, Oak Terrace

5:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration.....Lecture Hall, Mezzanine Floor
Harold L. Gainey, Kansas City

8:00 "A Midsummer Dream".....Ballroom, Hotel Radisson
For the members of the Minnesota State Medical Association and their wives and all convention visitors . . .

At eight o'clock on the evening of June 7, 1948
The Dayton Company of Minneapolis
will present
"A Midsummer Dream"
featuring fashions for summer, 1948, with a background
of music by Fred Oldre and his orchestra
Dancing from nine to twelve in the Ballroom to the
music of Fred Oldre and his orchestra.

Tuesday, June 8

SECTION I—GENERAL SESSION

A.M.

8:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

9:00 *Clinical-Pathological Conference*.....General Lecture Hall
Subject: Acute Abdominal Pain
Presentation of Cases—Arthur H. Wells, Duluth
Differential Diagnosis—Walter G. Maddock, Northwestern University Medical School, Chicago

10:15 *Intermission*

Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

11:00 *Panel Discussion:* Nutrition in Surgery.....General Lecture Hall
Moderator: Albert M. Snell, Rochester
Parenteral Feeding in Surgery—Walter G. Maddock, Northwestern University Medical School, Chicago
Entoral Feeding—Richard L. Varco, Minneapolis

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Admiral Room, Hotel Radisson
(Luncheon Meeting)
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

12:15 Round Table Luncheons.....Hotel Radisson
(Listed under Section II—Special Session)

1:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

2:00 *Panel Discussion:* ANTIBIOTICS ..... General Lecture Hall
Moderator: Wesley W. Spink, Minneapolis
Present Trends in Penicillin Therapy—Samuel H. Boyer, Jr., Duluth
Streptomycin and Newer Antibiotics in Infections Other Than Tuberculosis—Wallace E. Herrell, Rochester
Streptomycin in Tuberculosis—Karl Pfuetze, Cannon Falls
Summary—Wesley W. Spink, Minneapolis

3:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

4.00 *Pediatrics Lecture:* ST. LOUIS ENCEPHALITIS ..... General Lecture Hall
Russell J. Blattner, Professor of Pediatrics, Baylor University College of Medicine, Houston, Texas
Presentation of Speaker: Irvine McQuarrie, Minneapolis, representing the Northwestern Pediatrics Society

5:00 Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration ..... Lecture Hall, Mezzanine Floor
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

5:00 SOCIAL HOUR PRECEDING THE BANQUET
Five to Six-Thirty o'clock in the
Italian Room, Hotel Radisson

Mr. George Ulmer, President, Physicians and Hospitals Supply Company and the Ulmer Pharmacal Company of Minneapolis. EVERYBODY is invited to attend.

7:00 *Annual Banquet* ..... Ballroom, Hotel Radisson
(Listed under Section II, Special Session)

Tuesday, June 8

SECTION II—SPECIAL SESSION

A.M.

9:00 *Symposium on Research Problems* ..... Lecture Hall, Mezzanine Floor
Chairman: James T. Priestley, Rochester
Treatment of Leukemia with Urethane—Howard Horns, Minneapolis
The Extraction of Secretion from the Intestine of Man—A. H. Baggenstoss, Rochester
Fundamental and Clinical Aspects of Pulmonary Hypertension—Craig Borden, Minneapolis
Measurement of Portal Vein Pressure in the Intact Animal—F. W. Hoffbauer, Minneapolis, and J. L. Bollman and John Grindlay, Rochester
Experiences with Screening Tests in the Detection of Cancer—David State, Minneapolis

10:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

11:00 *Symposium on Research Problems* (Continued) ..... Lecture Hall, Mezzanine Floor
Extrarenal or Prerenal Azotemia—John La Bree, Minneapolis
Clinical Measurement of the Viscosity of the Plasma—Frank D. Mann, Rochester
Effect of Vagotomy on Intestinal Motility—S. Faik, Rochester
Fluorescein in the Diagnosis of Brain Tumors—George Moore, Minneapolis

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration ..... Admiral Room, Hotel Radisson
(Luncheon Meeting)
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

12:15 Round Table Luncheons ..... Hotel Radisson
Common Skin Diseases—Merriam G. Fredricks, Duluth
Hypertrophies in Children—Paul F. Dwan, Minneapolis
The Nervous Patient—Francis J. Braceland, Rochester
Radioactive Iodine in the Treatment of Thyroid Disease—Charles E. Rea, St. Paul
Antihistamine Drugs—Bayard T. Horton, Rochester
Management of Hand Infections—Michael L. Mason, Chicago
Ménière's Disease and Vertigo—Lawrence R. Boies, Minneapolis
Insulin Mixtures—John R. Meade, St. Paul
Urethane, Nitrogen Mustard—Edmund B. Flink, Minneapolis

2:00 *Minnesota Academy of Ophthalmology and Otolaryngology* ..... Lecture Hall, Mezzanine Floor
Plastic Submucous Resection Otoplasy—Dean McAllister Lierle, Professor of Otolaryngology, State University of Iowa, College of Medicine, Iowa City

3:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

4:00 *Minnesota Academy of Ophthalmology and Otolaryngology* (Continued) ..... Lecture Hall, Mezzanine Floor
Histamine in Ophthalmology and Otolaryngology—Bayard T. Horton, Rochester

5:00 Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

5:15 Obstetric Manikin Demonstration ..... Lecture Hall, Mezzanine Floor
Earl C. Sage, Professor of Obstetrics and Gynecology, University of Nebraska School of Medicine, Omaha

5:00 Social Hour Preceding Banquet ..... Italian Room, Hotel Radisson
Through the courtesy of Mr. George Ulmer, President, Physicians and Hospitals Supply Company and the Ulmer Pharmacal Company of Minneapolis

7:00 Annual Banquet ..... Ballroom, Hotel Radisson
Presiding: Ralph H. Creighton, Minneapolis, President, Hennepin County Medical Society
Presentation of guests
Introduction of Mrs. Harold F. Wahlquist, Minneapolis, President, Woman's Auxiliary
Presentation of Southern Minnesota Medical Association Medal
Presentation of Distinguished Service Medal
Presidential Address: "The New Look in Medicine," A. E. Cardle, Minneapolis, President, Minnesota State Medical Association
"Medicine—A Force for Peace"—Nicholas Amtoroff, R.S.B.T., New York

Wednesday, June 9

Section I—General Session

A.M.

8:00 Scientific Cinema ..... West Corridor.
Visit Scientific and Technical Exhibits

9:00 *Clinical-Pathological Conference* ..... General Lecture Hall
Subject: Uterine Bleeding
Presentation of Cases—John L. McKelvey, Minneapolis
Differential Diagnoses—Erle Henriksen, Associate Professor of Gynecology and Consulting Pathologist, University of Southern California, Los Angeles

10:15 *Intermission*

Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

11:00 *Arthur H. Sanford Lecture in Pathology* ..... General Lecture Hall
Subject: Rheumatic and Bacterial Endocarditis—Benjamin J. Clawson, Minneapolis
Presentation of Speaker: A. H. Baggenstoss, Rochester, President, Minnesota Society of Clinical Pathologists

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration ..... Spanish Room, Hotel Radisson
(Luncheon Meeting)
John E. Faber, Rochester

12:15 Round Table Luncheons ..... Hotel Radisson
(Listed under Section II, Special Session)

1:00 Scientific Cinema ..... West Corridor
Visit Scientific and Technical Exhibits

2:00 *Public Health Meeting:* An Unfinished Job ..... General Lecture Hall
Chairman: A. E. Cardle, Minneapolis, President, Minnesota State Medical Association
Our Part in These Times—John O. Christianson, D.Sc., Superintendent, University of Minnesota School of Agriculture, St. Paul
The First Line of Defense—Lloyd E. Harris, Rochester
National Health Legislation—Senator Joseph H. Ball, Washington, D. C.
Budgeting for Health Care—Robert L. Novy, President, Michigan Medical Service, Inc., Detroit
Teamwork in the Conservation of Human Resources—Morris Fishbein, Editor, *Journal of the American Medical Association,* Chicago

Wednesday, June 9

Section II—Special Session

A.M.

11:00 *Minnesota Heart Association* ..... Lecture Hall, Mezzanine Floor
Chairman: Paul F. Dwan, Minneapolis, President, Minnesota Heart Association

P.M. *Afternoon*

12:15 Obstetric Manikin Demonstration.....Spanish Room, Hotel Radisson
(Luncheon Meeting)
John E. Faber, Rochester

12:15 Round Table Luncheons.....Hotel Radisson
Lobotomy—Wallace P. Ritchie, St. Paul
Liver Function Tests—Herman J. Wolff, St. Paul
Pelvic Pain—Erle Henriksen, Los Angeles
Office Procedures in Rectal Diseases—Walter A. Fansler, Minneapolis
Newer Drugs—Raymond N. Bieter, Minneapolis
Common Urinary Problems—John L. Emmett, Rochester
Eye Ground Findings in Everyday Practice—Virgil J. Schwartz, Minneapolis
Facts and Fallacies Concerning the Thymus Gland—George B. Logan, Rochester
Treatment of Heart Disease—Paul G. Boman, Duluth

1:00 Scientific Cinema.....West Corridor
Visit Scientific and Technical Exhibits

2:00 Public Health Meeting: An Unfinished Job.....General Lecture Hall
(Listed under Section I—General Session)
A special health conference entitled "An Unfinished Job" will conclude the convention program. Invited to hear distinguished guest speakers discuss health problems, showing medicine's responsibility and the interplay of other factors influencing health and welfare, will be members of allied health organizations, social welfare workers, school and government authorities and representatives from the co-operative, farm, labor, professional and civic groups.

SCIENTIFIC EXHIBITS

S-12 *American Association of Medical Social Workers, Minnesota District*

S-20 *American Cancer Society, Minnesota Division*

S-17 *"American Red Cross Blood Program"*
American National Red Cross

S-14 *"Blue Shield"*
Minnesota Medical Service, Inc.

S-6 *"Bronchospirometry and Its Clinical Application"*
Lowell J. Peterson, H. S. Wells and N. K. Jensen,
Veterans Hospital and University of Minnesota

S-29 *"Cardiovascular Disease—Recent Studies"*
Minnesota Heart Association
Motion Picture Demonstrations of the Action of the Cardiac Valves—H. E. Essex, Ph.D., H. L. Smith and E. J. Baldes, Ph.D.
Developmental Basis for (1) Persistent Truncus Arteriosus, (2) Complete Transposition and (3) Tetralogy of Fallot—J. E. Edwards and A. H. Bulbulian, D.D.S.
Motion Picture Demonstration of Continuous Sampling of Intra-Arterial Blood—E. H. Wood, G. E. Montgomery, Jr. and J. E. Jerasi
Coarctation of the Aorta: Surgical Treatment by Excision of the Stricture and End-to-End Anastomosis of the Aorta—O. T. Clagett.
Ultra High-Speed Motion Picture Studies of Cardiac Contraction—William Hunt, Carney Landis, Gordon Moe and Maurice B. Visscher
Anomalies of the Aortic Arch and Its Branches (Cabinet Exhibit)—J. E. Edwards
Congenital Anomalies of the Heart and Great Vessels: Clinical and Pathological Study of 115 Cases (Cabinet Exhibit)—J. E. Edwards, R. L. Parker, H. M. Rogers, A. H. Bulbulian, D.D.S., T. J. Dry and H. B. Burchell

S-1 & 2 *"Clinical Cancer Activities of the University of Minnesota"*
Arnold J. Kremen, Wilhelm Stenstrom, David State, George Moore and Robert Huseby

S-25 *"Clinical Science Exhibit"*
William H. Crawford, D.D.S., Dean
School of Dentistry, University of Minnesota

S-4 *"Congenital Displacement of the Hip Joint—Recognition and Treatment During Infancy —Before Weight Bearing"*
Vernon L. Hart, Wesley H. Burnham and Stuart L. Arey, Minneapolis

S-16 *"Diagnostic Aids and Management of Bulbar Poliomyelitis"*
National Foundation for Infantile Paralysis

S-7 *"Endocrine Products: Actions and Uses"*
American Medical Association

S-28 *"Factors in Cardiovascular Degeneration"*
Ancel Keys, Carlton Chapman, Austin Henschel, Joseph Brozek, Olaf Mickelson, Ernest Simonson and Henry L. Taylor,
Laboratory of Physiological Hygiene, University of Minnesota

S-19 *"Glaucoma"*
Minnesota Society for the Prevention of Blindness

S-8 *"Hernia Repair" (McArthur-McVay-Bassini)*
Carl O. Rice, Minneapolis

S-30 *Mayo Foundation for Medical Education and Research and the Mayo Clinic*
"Carcinoma of Larynx, Methods of Treatment and Results"
G. B. New, F. Z. Havens, F. A. Figi and J. B. Erich
"Surgical Treatment of Certain Types of Intrathoracic Lesions"
S. W. Harrington, H. K. Gray and O. T. Clagett

S-18 *Minnesota Department of Health*

S-15 *Minnesota Mental Hygiene Society, Inc.*

S-14 *Minnesota Society for Crippled Children*
Activities of the Society

S-21 *Minnesota State Medical Association Committee on Tuberculosis*

S-10 *Minnesota State Pharmaceutical Association*

S-13 *Minnesota Tuberculosis and Health Association*

S-23 *"Multiple Polyposis of the Colon"*
Arthur W. Ide, Veterans Hospital, Minneapolis

S-3 *"Physical Medicine in Acute Poliomyelitis"*
Miland E. Knapp and Myron D. Lecklitner,
Sheltering Arms Hospital, Minneapolis

S-27 *"Peripheral Vascular Diseases"*
Wayne Hagen, C. D. Adkins, H. A. Alexander and H. O. McPheeters, Minneapolis

S-11 *"Recruitment of Student Nurses"*
Minnesota Nurses' Association

S-22 *"The Rehabilitation of the Neurologic Patient"*
Departments of Neurology and Physical Medicine Rehabilitation
Veterans Hospital, Minneapolis

S-5 *"Report on a Simple Method of X-Ray Pelvimetry and Evaluation of Seventy Cases"*
Staff, Maternity Hospital, Minneapolis

S-24 *"Right Heart Catheterization"*
Richard V. Ebert, Craig Borden, H. S. Wells and Russell Wilson,
Veterans Hospital, Minneapolis

S-9 *"What Is Industrial Medicine"*
Leonard Arling
Northwest Industrial Clinic, Minneapolis

110 *Woman's Auxiliary to the Minnesota State Medical Association*

Minneapolis Surgical Society

Meeting of January 8, 1948

Dr. L. Haynes Fowler, Presiding

CARCINOMA OF THE GALL BLADDER

An Analysis of 70 Cases

EDWIN G. BENJAMIN, M.D.
Minneapolis, Minnesota

This study was made by checking records in four institutions: thirty cases from the University of Minnesota Hospitals, twenty from the Minneapolis General Hospital, twelve from Northwestern Hospital, and eight from St. Barnabas Hospital, all of Minneapolis. All of the cases included in this study were proven by operation or autopsy. No case was included where the information was inadequate or the diagnosis questionable. Only cases from the past decade, from 1937, were included in this study.

Incidence

The exact incidence of carcinoma of the gall bladder is somewhat difficult to determine. Some authors have given it fifth place in frequency of cancer among the organs of digestion. The order is as follows: (1) stomach, (2) colon and cecum, (3) rectum, (4) esophagus, (5) gall bladder and ducts.[11] Carcinoma of the gall bladder has a tendency to occur more frequently in women than in men. It has been estimated to account for between 8 and 10 per cent of all cancer in women. A study of autopsy records at the department of pathology at the University of Minnesota, for the period 1937 through 1946, shows that out of 25,283 consecutive autopsies, carcinoma of the gall bladder was listed as the cause of death eighty-four times, an incidence of 0.33 per cent. This figure corresponds with other reports in the literature.

Age and Sex

The incidence of carcinoma of the gall bladder is considerably higher in women than in men. The greater incidence in women is thought by many to result from the greater preponderance of gallstones in females. In this series, the disease was found in forty-seven females and twenty-three males—the ratio being a little more than two to one. The usual ratio is given as three women to one man.

Carcinoma of the gall bladder is definitely a disease of the so-called "cancer age." It almost always occurs in a patient over forty years of age. The average age in various reported series ranges from fifty-seven to sixty-five. The youngest patient reported was a man twenty-two years of age, while the oldest was a woman of ninety-three. All patients in this series were over forty. The youngest was forty-three and the oldest eighty-three. The average age for this series is sixty-two years.

TABLE I. AGE AND SEX

Age	Male	Per cent	Female	Per cent	Total	Per cent
41-50	4	5.7	3	4.2	7	10
51-60	6	8.5	14	20.0	20	28.5
61-70	8	11.4	17	24.2	25	35.7
71-80	4	5.7	12	17.1	16	22.8
81	1	1.4	1	1.4	2	2.8
Total	23	32.8	47	67.2	70	100.0

Symptomatology

The symptoms associated with carcinoma of the gall bladder are variable, depending on the location and extent of spread of the lesion. The most common symptoms in the order named are: pain, weight loss, weakness, anorexia, nausea, vomiting, jaundice, and the presence of a mass. Other symptoms seen less frequently are diarrhea, constipation, bloating or belching, chills and fever, and tarry stools.

The duration of the symptoms varies greatly. Most of the patients in this series had complaints of more than one month duration, but less than six months. A number of patients seemed to be acutely ill at the onset, their symptoms being present only for a few days or weeks. Several patients never had any acute symptoms whatever, but complained of vague abdominal distress for several years. Many had a history of acute biliary colic many years previously, with or without jaundice, which cleared up spontaneously and never reoccurred. Three of the patients in this series had previous gall-bladder operations; two had their gall bladders removed, and one had a drainage with removal of stones. One patient had an incision of a subdiaphragmatic abscess, which subsequently developed a biliary fistula.

TABLE II. DURATION OF SYMPTOMS

Under 1 month	14
1-6 months	34
6 months to 1 year	12
To 5 years	10

Where a careful history had been taken, some interesting facts were elicited. Very often, where the acute symptoms had been present for a relatively short time, it was revealed, on close questioning, that the patient had had digestive disturbances over a period of many years. Food intolerances were noted in many instances.

Inaugural thesis.

Constipation with the use of cathartics was common. A number of patients had sought medical advice for their discomfort. Some had been given medications without adequate examination to determine the cause of their trouble. Others had had extensive studies, including laboratory and x-ray. Of these, several had had definite diagnoses made of gall-bladder disease, including the presence of gallstones. Some had been advised to have an operation performed, but had refused. In such cases it is interesting to speculate whether or not such an unfortunate development as carcinoma of the gall bladder would have occurred if the patients had heeded the advice given them.

Pain was the most frequent complaint. It was present in 85 per cent of the cases in this series. It is located in the right upper quadrant and the epigastrium. Once the pain has become noticeable, it is usually constant, dull, and persistent. It is often described as a burning sensation, fairly definitely localized and usually not radiating. It is quite distinct from the pain of biliary colic, although colic was present in some of these patients.

Jaundice was seen in thirty-four of the patients in this series, an incidence of forty-eight per cent. Once jaundice has developed, it is usually continuous. Clay-colored stools and dark urine have usually been noted by the patient even before the jaundice has become pronounced. Pruritus was a common accompaniment, and was very distressing in several of the cases. The icteric index rises rapidly, very commonly over 100 and much higher in some instances.

Weight loss was a common complaint. It was present in 64 per cent of the cases in this study. Weight loss, weakness and anorexia are present in nearly all cases of cancer. In this series, weight loss was a prominent feature and was the first symptom in some instances. The weight loss was more profound where the gastrointestinal disturbance was severe. The average weight loss where this symptom was mentioned was 26.3 pounds. One man, who had a large mass present, lost 60 pounds in a period of four months.

A palpable *mass* was found to be present in thirty-four cases (48 per cent). It was usually firm and tender and sometimes attained considerable size. The liver edge could be palpated in nearly half of the cases. It was felt in all those with jaundice, and in some cases definite nodules could be palpated. The nodules were present in the advanced cases and probably represented metastases.

Anemia was not a prominent finding in this series. The average hemoglobin was 76 per cent. One hemoglobin was reported as 36 per cent—this in a patient who had bleeding into the bowel, as evidenced by tarry stools. The autopsy showed the carcinoma had perforated the duodenum. One patient had a hemoglobin of 107 per cent. This was probably due to dehydration from vomiting.

Causative Role of Gallstones

As with carcinoma elsewhere, the specific etiological factors in carcinoma of the gall bladder are not known. The relationship between carcinoma of the gall bladder and gallstones must be considered to be very important. In various reported series, the majority of cases show that stones have antedated the development of the malignancy. There is, in all probability, an irritation produced by the calculi which influences the production of the neoplasm.[9] It is obvious that cholelithiasis is not the only and direct cause of the carcinoma, for we see many patients with gallstones and inflammation of the gall bladder of many years' standing who do not develop malignancy. The role of stones as an exciting factor seems definite. The incidence of cases of cholelithiasis in which carcinoma finally developed has been estimated variously from 1.14 to 15 per cent.[11]

TABLE III. INCIDENCE OF GALLSTONES IN 70 CASES OF CACRINOMA OF THE GALL BLADDER

	Stones Present			*Stones Absent*		
	Number	Per cent	Average Age	Number	Per cent	Average Age
Males	8	12	64	15	21.5	59
Females	32	45	65	15	21.5	61
Total	40	57	64.5	30	43	60

In this group of cases, stones were definitely demonstrated in only 57 per cent of the cases. However, it should be remembered that many of these patients had the diagnosis made at operation where an extensive exploration was not done. It is the belief of this writer that this figure would be much higher if all of the cases reported were the result of autopsy findings. Where inoperable carcinoma was found, the incision was closed in many instances with no attempt being made to determine the presence or absence of stones.

If we consider only the autopsy reports, our figures are much different. It is admitted that surgical statistics are misleading, for, as stated, inoperable malignancies cannot be satisfactorily explored. In this series thirty-eight patients came to autopsy. Cholelithiasis was reported in thirty-one of the thirty-eight. Thus, stones were present in 81.3 per cent of the autopsied cases. This figure corresponds to those reported in the literature.[11]

Experimental studies on gall bladders of laboratory animals, in an attempt to produce carcinoma by the introduction of foreign bodies, have been undertaken by several authors. The results have, in the main, been inconclusive. Petrov and Krotkina were able to demonstrate carcinoma in five out of 100 guinea pigs after the introduction of sterile, hard, foreign bodies (which act like gallstones in the human).[12] This would lead us to agree with Graham, who advocates prophylactic removal of gall bladders for gallstones, even though they be of the so-called "silent" variety.[7]

Pathology

In most of the patients operated on, the presence of malignancy was determined readily by gross examination. In only two cases was a gall bladder removed for chronic cholecystitis and cholelithiasis, to have the diagnosis of carcinoma made by microscopic examination. It is a tribute to the diagnostic ability of the clinicians that

the true condition was suspected in all of the remaining cases.

In most instances the gall bladder was found to be enlarged, thick-walled, shaggy, and to contain thick bile. In several there was direct extention to the liver bed. In two cases, there were biliary fistulas. One patient had a perforation into the duodenum. Four had obstruction of the duodenum. Forty-two had metastases to the liver and/or nodes. The majority of the cancers were of the adenocarcinoma type, where the type was stated. Three scirrhous and two squamous cell carcinomas were reported.

No attempt was made to classify the type of carcinoma according to Broder's method. This might have been useful, as some surgeons are able to estimate the probability of metastases and the relative length of life of the patient following surgery. In some instances it may have been of value in determining the type of operation to be performed.

Diagnosis

The difficulty of establishing a diagnosis of carcinoma of the gall bladder preoperatively is readily apparent. Except when advanced, the clinical picture is one of benign biliary disease. A typical instance could be summarized as follows:

A woman, aged 60, with a past history of epigastric distress, begins to notice continuous pain in the right upper quadrant. There is belching, regurgitation, fullness associated with anorexia, and weakness. There may have been a few attacks of biliary colic, and there may be weight loss, nausea, vomiting, and possibly jaundice. The onset is indefinite and insidious. The fact that the jaundice is associated with pain does not rule out malignancy. The jaundice in malignancy does not usually come on suddenly, as is true with that seen where there is blockage from a stone. The presence of a mass must be regarded as a late sign.

Laboratory work and x-rays are of little help in establishing a diagnosis. Many of the cases in this series had very extensive laboratory studies. Also they had the benefit of competent medical consultations. It is fair to state that in no case was an early diagnosis made which could have led to an earlier operation, thus making it possible to eliminate the cancer before an extensive spread had taken place. It is an accident when a carcinomatous gall bladder is removed prior to its involving the liver or ducts.

The icteric index or serum bilirubin determinations were made in practically all patients in this series who had jaundice. They were, of course, found to be elevated, but the results give no information as to the presence of carcinoma. Many patients had extensive liver function tests, but here again the findings gave only a clue as to the presence of liver damage and no specific information of the cause of the trouble could be obtained. Practically all other laboratory tests gave similar lack of helpful evidence. The majority of patients had preoperative x-ray studies—some very extensive. Here, again, the results were disappointing and the findings were of little aid. Several patients had gall-bladder studies reported as entirely normal. Several patients had nonfunctioning gall bladders, and stones were demonstrated in a few. In no case, however, was the roentgenogram an aid in determining the nature of the disease. Gastrointestinal x-rays were made in many cases, and were not of any particular help.

Surgery

The type of operation selected in cases where a carcinomatous process involves the gall bladder depends on the individual case. As has been stated, most of the cases in this series were inoperable and only exploration and biopsy were carried out. The operation may be palliative, or, if the condition permits, a radical attempt may be made to extirpate the neoplasm. The palliative procedure may concern itself with an attempt to reestablish the normal flow of bile where an obstruction exists. This, at best, is only a temporary expedient, but it will serve to clear up jaundice and relieve the patient of troublesome pruritus. If the normal flow of bile cannot be restored, then a cholecystostomy may be done. Various types of anastomoses have been attempted where the common duct was involved. These include cholecystogastrostomy, cholecystoduodenostomy, and cholecystojejunostomy. If the situation lends itself to reconstruction of the bile ducts, some such method as that advocated by Cole,[3] with the use of vitallium tubes, or the method devised by Allen, with anastomosis of the proximal duct to the jejunum,[2] may be used.

No radical procedures were performed on the patients operated on in this series. Different types of operations have been described, and might be useful in selected cases. These operations appear to be most formidable. In most cases it would involve the resection of a portion of the liver, as the carcinoma usually invades the liver early in the disease, spreading by direct extension. It must be admitted that extensive involvement of the liver and bile passages with carcinoma is one of the most hopeless situations confronting a surgeon. Brunschwig and Bigelow have advocated excision of the gall bladder and ducts.[1] Payne has reported cases where a portion of the liver has been resected. Some modification of a Whipple operation has been attempted. At the present writing, these procedures have not given any great hope. It is really questionable whether the average length of survival of the patients subjected to these operations is any better than those who have received nonoperative treatment only.

Summary

Seventy cases of carcinoma of the gall bladder are presented. Twenty-three were in men and forty-seven were in women. The average age was sixty-two years.

The clinical picture was not well defined but resembled that of benign biliary disease in the early stages.

Of the seventy patients there were forty-five who had operations performed and thirty-eight came to autopsy. The incidence of calculi in the entire group was 57 per cent while the percentage was 81.3 in the autopsy group.

Operative procedures may be palliative or radical. It is doubtful whether the radical procedures are justified except in highly selected early cases. In view of the difficulty of diagnosis good results can rarely be expected.

The prognosis of carcinoma of the gall bladder is poor. Inasmuch as the incidence of malignancy is between 4

and 5 per cent of calculous gall bladders, the only hope for reduction of the general incidence lies in early removal of calculous gall bladders. This procedure is justified because modern surgical methods have reduced the operative mortality for cholecystectomy to less than 1 per cent.

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Discussion

Dr. Hamlin Mattson: Dr. Benjamin should be commended for this study of carcinoma of the gall bladder in this area for a ten-year period. A few years ago I made a similar study and know the amount of work which is involved. Mine was largely necropsy data. The earlier surgeons found carcinoma of the gall bladder more than we do. The literature is replete with pathologic and necropsy studies but contains little on early diagnosis and surgical treatment. Perhaps the best surgical treatment is indicated by the fact that in the earlier years when the gallstones were permitted to battle it out with the body, there was a greater instance of carcinoma. Therefore the best treatment is removal of the calculous gall bladder whenever possible. The person who has a cholecystectomy because of stones and in whom an early cancer of the gall bladder is found is fortunate indeed.

When carcinoma is confined to the gall bladder itself, cholecystectomy and removal of adjacent liver tissue is advisable. In advanced cases, peritoneoscopy rather than laparotomy seems indicated.

A study of this type is beneficial, in that it reminds us that there is no such thing as an innocent gallstone.

Dr. A. A. Zierold: My experience with carcinoma of the gall bladder has been a small one. Within the past ten years the incidence of carcinoma of the gall bladder was no more than a fraction of 1 per cent in the cases of gall-bladder disease in which I have operated. I don't believe that the average individual sees a sufficient number of such cases to give him a background for very extensive comment. Such collections as these, and as Doctor Mattson related, will indicate some trends. I believe that we can say that it is probable that the presence of stone in the gall bladder does have something to do with the incidence of carcinoma, but I believe that the incidence is so low that the evidence merely indicates a trend.

I believe there is one thing that has not been emphasized in the series of Doctor Benjamin, and that is—early and late the picture of carcinoma involving the biliary tract is the picture of carcinoma elsewhere. Anorexia and weight loss are outstanding and without apparent cause. Remedial surgery appears to be beyond us at this particular time. Palliative surgery, except in a few cases, also is a thankless undertaking. In the individual who is so far advanced in his disease as to make survival questionable, little or no damage may be done by exploratory examination, but some damage may be done by peritoneoscopy. In my hands, this procedure is of limited diagnostic value.

I think Doctor Benjamin should be congratulated on this paper. It represents a great deal of work, unavoidable drudgery, and considerable interest to carry it through as completely and logically as he has done.

THE ROLE OF NARCOTICS (MORPHINE) IN POSTOPERATIVE MORBIDITY

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In addition to analgesia, narcotics have many other physiologic effects which have, individually, been the subject of numerous laboratory and clinical investigations. Knowledge of their total influence on postoperative morbidity has been mainly speculative. The relief of pain is essential, yet other concomitant physiologic actions of narcotics, such as depression of cough, smooth muscle spasm, et cetera, may initiate a chain of events cumulating in a detrimental result. It is the purpose of this study to evaluate the benefits and the disadvantages of the postoperative use of narcotics by an analysis of postoperative morbidity. Morphine and codeine were used almost exclusively. In occasional instances where other analgesics were used they were given a proportionate value and added to morphine in computing total dose.

Method of Investigation

Three hundred and sixty-eight cases of uncomplicated intra-abdominal operations were selected, first by running a series with morphine, then one without. In four instances, cases begun in the no-morphine series did receive morphine in their postoperative course to relieve pain. These cases were left in the no-morphine group to avoid transferring their complications, possibly associated with pain, into the narcotic group. Those cases receiving no narcotics were given a barbiturate and atropine as preoperative medication and intravenous alcohol, 6 per cent, for postoperative analgesia. In occasional instances 1.0 gm. of sodium salicylate was given intravenously as a supplement to the alcohol, based on the evidence of synergism of the two drugs as noted by Wolff and Hardy.[22]

In order to obtain uniformity as to type of cases and thereby avoid the pitfalls of too many variables, and still not extend the study over too long a time, it was decided to make observations on intra-abdominal surgical cases. This series was further simplified by the exclusion of pediatric patients, patients with suppuration noted preoperatively or at operation, and cases involving bowel resection. When nasal suction or an inlying urinary catheter was used prophylactically, the case was not included, since certain complications thereby would have been averted. Antibiotics were used only for treatment of complications. All patients received inhalation anesthesia.

Table I lists the distribution of cases as to type of surgical procedure. A separate listing was kept of all

This study was conducted at the St. Barnabas Hospital as part of the training program for surgical residents.

the patients operated upon by one surgeon (Dr. X) so that variation of technique and postoperative management might be ruled out in a comparison of his group to the total series. These graphic comparisons (Figs. 5, 7, 9 and 11) in the series of Dr. X indicate a similar trend with the over-all series, with differences persisting from day to day, which in itself bears considerable significance. Had there been a larger series of cases, the significant difference probably would have been more evident.

For further analysis of the data, an arbitrary line was established to obtain comparison between high and low doses of morphine as well as none and any. One-half grain of morphine or a comparable dose of codeine, et cetera, was selected as the division, above which the dose was considered high.

Since actual diagnosis of complicating disease, such as atelectasis, pneumonia, pulmonary infarct, phlebothrombosis, et cetera, often is equivocal, and the incidence of the occurrence of a full-blown case is so infrequent, it was decided to pay more attention to the more frequenttly occurring and more easily observed signs and symptoms. Fever, cough, gas pains, vomiting, urinary retention, diarrhea, and chest pain all indicate bodily disorder and are either the signs of, or the precursors to, the more serious postoperative complications.

Of the 368 cases, 277 were given morphine as required for relief of pain as preoperative medication, or as a routine medication every four hours after operation. Ninety-one patients received no morphine at all. In the series of 141 cases of Dr. X, ninety received morphine and fifty-one got none. To evaluate the differences between these groups and to place proper weight or balance with groups of different sizes, statistical methods were employed. For assay of the percentile observations, the Edgerton-Patterson frequency distribution chart was used, and a difference of 2.5 standard deviations, i.e., critical ratio, was considered significant. In evaluating the differences of mean daily temperatures (Figs. 7 and 8), the formlas

$$K = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{Sx^2}{Nx} + \frac{Sy^2}{Ny}}} \qquad \text{and} \qquad Sx^2 = \frac{\Sigma x^2}{N} - \bar{x}^2$$

were used. K of greater than 1.96 was taken to be significant.

Graphs of the mean percentage incidence of cough, gas pains, catheterization for urinary retention, and emesis were plotted for the day of surgery and the following ten postoperative days. The statistical significance of the differences on each day was computed. The graphs are self-explanatory, but attention should be called to the days on which a significant difference occurred between the morphine and no-morphine curves.

TABLE I. COMPOSITE PICTURE OF 368 CASES

Divided into three series—all cases, those receiving narcotics (high-low dose) and those of Dr. X. The comparative incidence of complications can be noted.

	All Cases—368						
	Inactive Appendix	Acute Appendix	Gynecology Cases	Chole-cystectomy	Hernior-rhaphy	Miscel-laneous	Totals
None	13	22	23	10	19	4	91
Low	20	25	30	11	21	4	111
High	24	26	55	29	21	11	166
Total	57	73	108	50	61	19	368
	Cases of Dr. X—141						
None	13	21	23	10	19	4	90
Any	6	12	12	11	8	2	51
Total	19	33	35	21	27	6	141

Since an elevated temperature is indicative of bodily disorder of many possible sources, a difference in this sign should be important. Differences in mean peak daily temperatures are represented graphically in Figures 1 and 2, Figure 1 being the difference between none and any morphine and Figure 2 between high, low, and no doses. Statistical evaluation of differences on each individual day failed to exceed the critical ratio, but the persistence of even small differences, when repeated consecutively, gains considerable significance. A definite difference persists between the first and sixth postoperative days.

A scatter graph (Fig. 3) was compiled to demonstrate possible relationship of total dose of narcotic to days of fever, i.e., postoperative days until temperature remained at 99° or less. It is noted that there is roughly a distribution upward and to the right, indicating some correlation between higher total dosage and days of fever. It is possible, however, that an unsound conclusion might be drawn from this, since patients with complications probably required more prolonged analgesia. It is presented only as another view of the data for whatever it may be worth.

Results of the Study

Table II represents a listing of complicating symptoms, signs and diseases as a composite picture of the entire hospital course. The morphine group had 1.7 days more of fever, 0.51° higher than mean peak temperatures, et cetera. The line indicating average number of times or days of catheterization, cough, et cetera, takes into account the severity and duration of the complication, whereas percentage incidence accounts only for the number or percentage of patients exhibiting the symptom. The complicating diseases listed, such as pulmon-

ary embolism, atelectasis, et cetera, did not occur frequently enough in either group to be of true statistical significance. However, the difference in percentage of occurrence of sharp chest pain, 11.8 per cent to 5.7 per cent, and of diarrhea, 7.2 per cent to 1.1 per cent, is significant. A comparison of the column of cases of Dr. X to that of the total group is again quite parallel.

TABLE II. DISTRIBUTION OF ALL CASES AS TO TYPE OF SURGICAL PROCEDURE

		All Cases—368		Any Narcotics—277		Dr. X—141	
		No Narcotics 91	Any Narcotics 277	High Dose 166	Low Dose 111	No Narcotics 90	Any Narcotics 51
Days of Fever (Till Temp. 99° or Less)		3.29	4.99	5.54	4.16	3.28	5.00
Peak Temp. (Avg.)		100.08	100.59	100.66	100.48	100.07	100.77
Catheterization	Avg. No. Times	.59	.94	1.08	.73	.59	.98
	% Incidence	21.6	36.4	38.3	33.7	21.6	40.7
Gas Pains	Avg. No. Days	.65	1.36	1.66	.90	.65	1.26
	% Incidence	36.4	60.7	68.9	48.7	36.4	57.5
Cough	Avg. No. Days	.35	1.27	1.46	1.0	.35	1.04
	% Incidence	13.6	21.4	20.4	23.0	13.6	27.8
Emesis	Avg. No. Times	.86	1.01	1.14	.82	.86	.87
	% Incidence	37.5	45.3	49.7	38.9	37.5	37.0
Sharp Chest Pain—%		5.7	11.8			5.7	7.4
Pulmonary Emboli—% (Proved)		0	.4			0	0
Atelectasis or Pneumonia—%		0	4.3			0	3.7
Thrombophlebitis or Phlebothrombosis—%		0	1.1			0	0
Wound Infection—%		0	3.9			0	5.1
Wound Disruption without Infection—%		1.1	4.6			1.1	1.8
Evisceration—%		0	0.4			0	0
Ileus Requiring Suction—%		0	2.8			0	1.8
Diarrhea—%		1.1	7.2			1.1	11.1

None signifies that no narcotic was used. *Low* indicates that a total of ½ grain of morphine, or less, was given throughout the period ofobservation. *High* indicates that more than ½ grain of morphine or comparable dose of codeine was used.

As initially stated, it is not the purpose of this study to determine the causes of the differences observed, but some speculations may be in order based on our knowledge of the pharmacological action of morphine and its derivatives. A review of the literature regarding the observations of other investigators also serves as a basis for such speculations.

Incidence of Cough

The symptom cough attracts particular notice since it exhibits the greatest significant difference between the two groups. There is a greater than 2.5 standard deviation difference from the second through the tenth postoperative day (Fig. 4). Figure 5 illustrates essentially the same findings in the cases of Dr. X. The fact that the statistical significance begins on the second postoperative day must be accounted for.

A possible explanation for this difference in the narcotic and no-narcotic groups may be that morphine suppresses the cough reflex, tends to bronchial muscle constriction,[2,12] diminishes respiratory minute volume, rate and tidal exchange,[9] reduces vital capacity,[8] and decreases the percentage of oxygen saturation of arterial blood.[6] Coughing directly postoperatively is of great value to rid the bronchi of secretions accumulated during anesthesia. The morphine group received the drug, on the average, for two and a half days, and cough did not appear as a significant feature until the second postoperative day. This could be interpreted as narcotic suppression of cough for the first few days, followed by coughing due to, by then, established pulmonary disease resulting from accumulated secretions held within the lungs for too long a time. This situation alone could account for the greater elevation of temperature in the narcotic group.

Incidence of Gas Pains

Gas pains were significantly different in the two series of cases on the first, second and third days (Fig. 6). Figure 7 illustrates essentially the same findings in the cases of Dr. X.

The difference in gas pains is probably related to the spastic influence of morphine on nearly all smooth muscle. Any conclusions regarding intestinal activity may be speculative, because experimental and clinical observations have been made in abnormal situations. Exteriorization of bowel segments, intubation and balloon studies and roentgenography have some unnatural sequalae. A balloon and tube is a foreign body and records only reaction in a particular location. Barium is, likewise, foreign to the bowel and has certain characteristics to which the bowel is not normally accustomed.[1]

Constipation is a well-known effect of morphine compounds. This is due, in part, to slow gastric emptying, pyloric and anal sphincter spasm[12,16] and in part also to dis-co-ordination of the peristaltic and mixing waves of the intestine as a whole.[11] Its effect might be comparable to a spastic constipation.

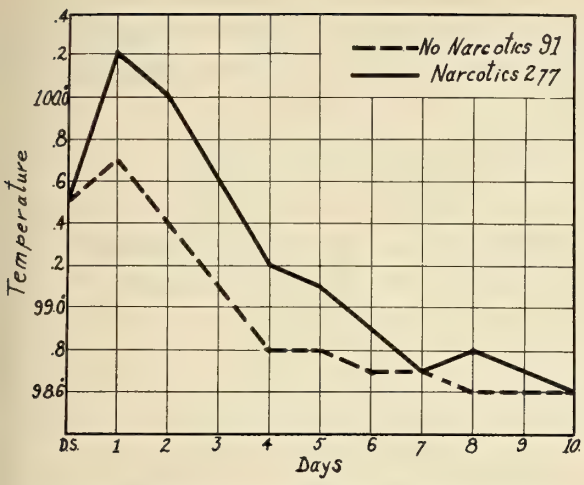


Fig. 1. There was no statistical significant difference in the temperature elevation in the two groups of cases, but the fact that the temperatures were slightly different from day to day lends significance in itself.

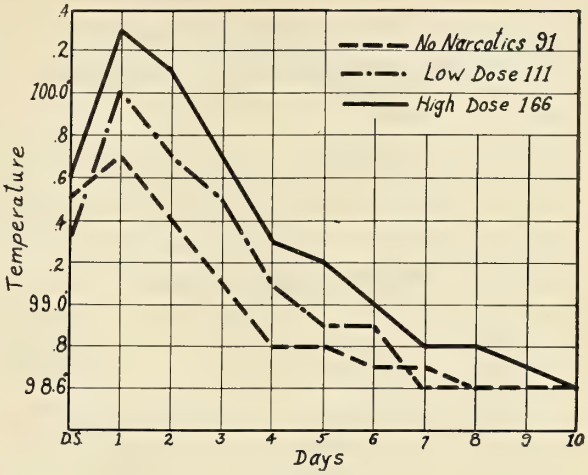


Fig. 2. Temperature difference in high, low and no narcotic series.

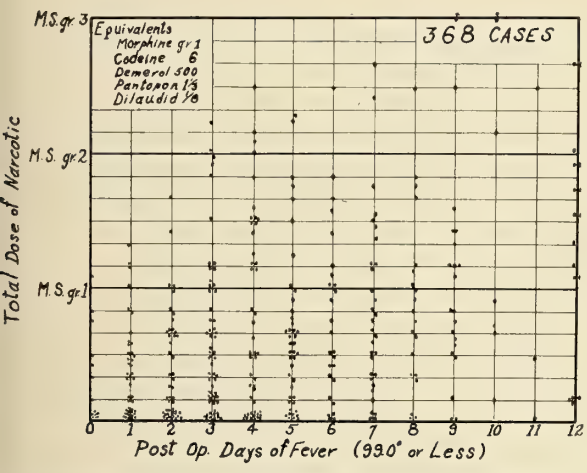


Fig. 3. The scatter graph illustrates a tendency to distribution upward and to the right, suggesting some correlation between a high dose of narcotics and the prolongation of fever.

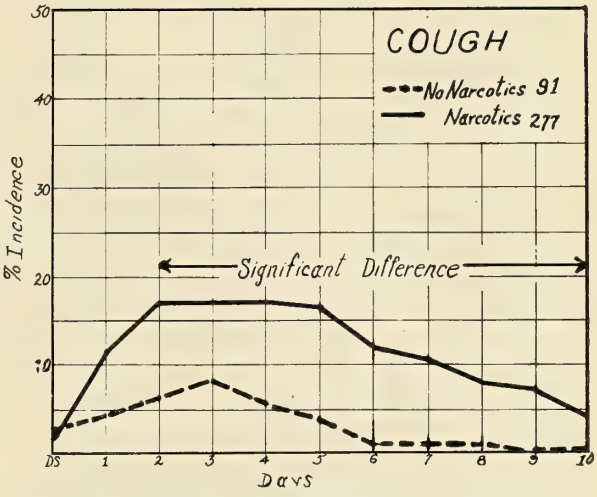


Fig. 4. A statistically significant difference in the incidence of cough with and without the use of morphine is observed from the second to the tenth postoperative day.

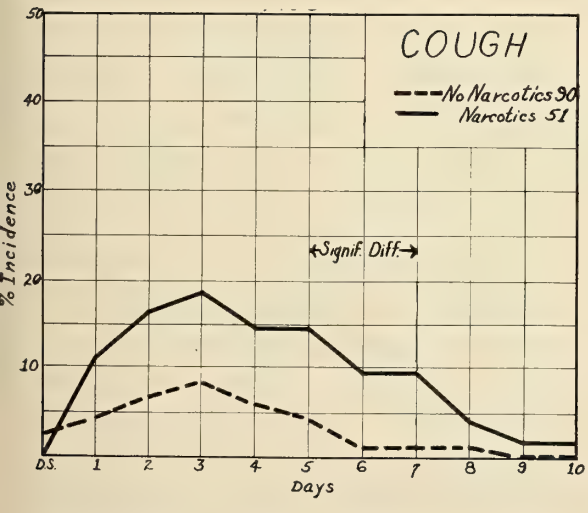


Fig. 5. Cases of Dr. X showing a similar curve to that observed in Figure 4.

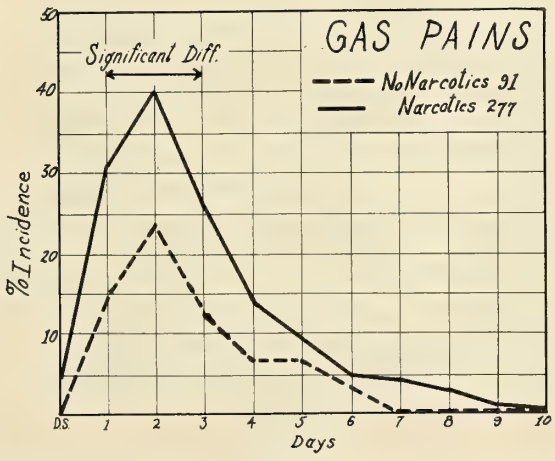


Fig. 6. A statistically significant difference in the incidence of gas pain colic was evident from the first to the third postoperative day.

Most investigators are in agreement that with the use of morphine there is an increased muscular tone in at least one or another of the phases of intestinal muscular activity.[1,2,10,11,12,13,15,18,21,24] Some authors believe that there may be enough spasmogenic effect of morphine on the intestine, at sites other than its sphincters, to produce areas of spasm.[13,18,24]

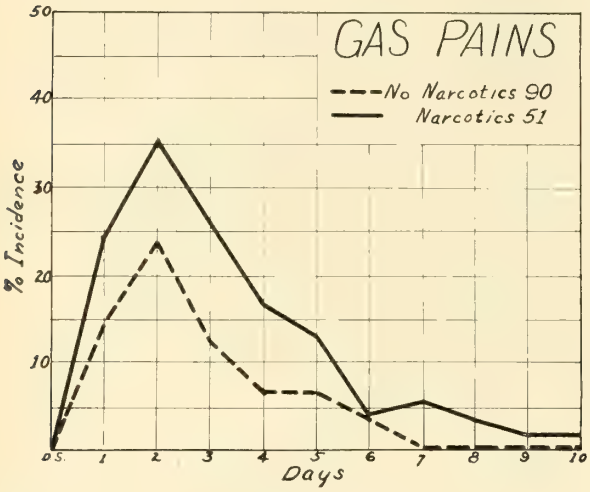


Fig. 7. Cases of Dr. X showing a similar curve to that in Figure 6.

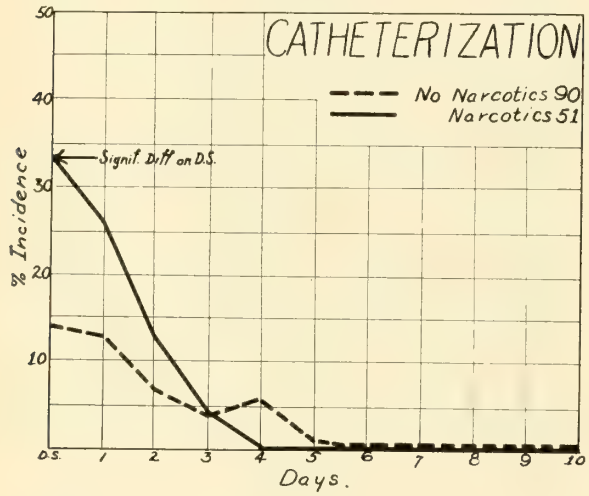


Fig. 9. Cases of Dr. X showing a similar curve to that in Figure 8.

If one carefully differentiates gas pain colic from paralytic ileus, or intestinal obstruction, some confusion is eliminated. In paralytic ileus there is distention without crampy pains, whereas gas pains distention presents an entirely different picture. There are numerous references in the literature which fail to define carefully such terms.[5] Gas pains resemble obstructive colic. In another study we have found x-ray evidence of distention proximal to an area of segmental spasm. We found such areas to be most commonly located at trigger zones in the colon, the hepatic and splenic flexures.

All the abnormal influences of morphine on the intestinal musculature may explain the difference in percentage incidence of gas pains between the two groups involved in this study. Other explanations may be equally or more reasonable. Finally, attention should be called to the fact that some observers believe that there

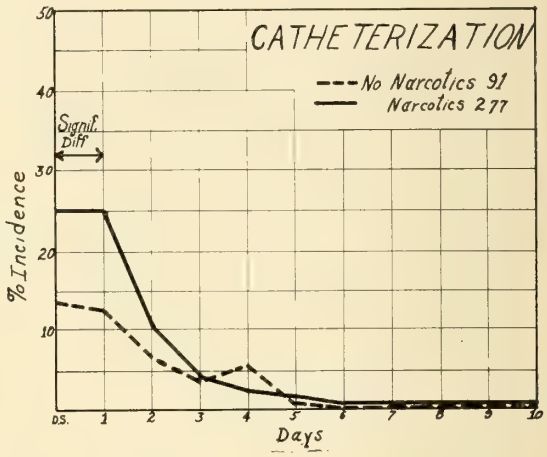


Fig. 8. The incidence of catheterization was significantly different only on the day of surgery.

is a variable effect depending upon the size of the dose,[13] and in all probability there are individual patient differences in sensitivity to the given dose. It is possible that even a single dose may set off the chain of events resulting in colic. The balance must be quite thin, for those receiving no morphine also had symptoms of gas pain, although not as many patients complained of this.

Incidence of Urinary Retention

The analysis of catheterizations indicates a statistically significant difference in the narcotic and no narcotic groups on the day of surgery and the first postoperative day (Figs. 8 and 9).

Urinary retention is most likely due to the spastic influence of morphine on the trigone musculature.[3,12] The morphine inhibition of water diuresis[3] may also play a part in the delay of urination.

Incidence of Emesis

The emetic property of opiate derivatives[12] on a sensitive individual is a well-known fact. In this study, emesis showed its greatest and only significant difference during the period of more frequent morphine administration, i.e., the day of surgery and first postoperative day (Figs. 10 and 11).

Other writers have noted other side effects of morphine which might affect the difference in morbidity found in this study. Hyperglycemia,[4] inactivation of cholinesterase,[23] decrease of prothrombin time,[14] as well as various cardiac, circulatory and metabolic changes,[7,20] have been observed and could influence postoperative morbidity.

To produce the true and complete relationship between the increased incidence of complications found by this clinical study and the pharmacological properties of morphine which might account for the increase, one must consider the factors common to both groups, name-

ly anesthesia, operation, and disease. The pharmacologic effects of morphine as related to these factors are likely quite different from normal or single factor situations.

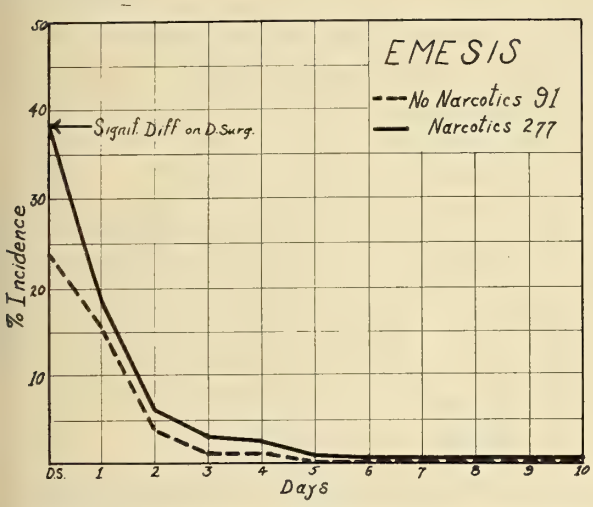


Fig. 10. Emesis occurred more frequently in the narcotic group only on the day of surgery. On that day a statistically significant difference appeared.

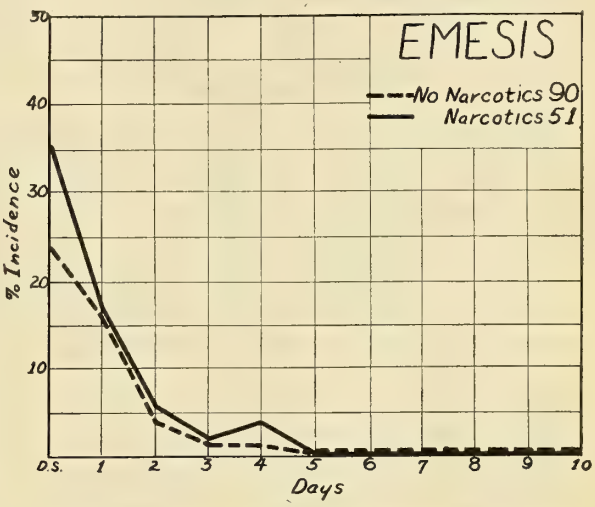


Fig. 11. Cases of Dr. X showing a similar curve to that in Figure 10.

Summary and Conclusions

A statistical evaluation of the influence of morphine on postoperative morbidity was made by comparing the incidence of complicating signs and symptoms between a group of ninety-one patients who received no morphine and a group of 277 patients who received varying doses of morphine.

A statistically significant difference was found in cough, gas pains, urinary retention, vomiting and fever in favor of the no-narcotic group.

The greatest difference was found to be cough, which was significant from the second through the tenth postoperative day.

The incidence of gas pain colic can be reduced by decreasing or eliminating the use of morphine.

Because of the undesirable side effects of narcotics, other methods or drugs for obtaining relief from pain must be searched for.

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PREOPERATIVE AND POSTOPERATIVE NUTRITIONAL REQUIREMENTS

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As one of the residents at the St. Barnabas hospital,

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I have been assigned a problem dealing with preoperative and postoperative nutritional requirements. Dr. Strickler has presented some comparative morbidity figures which he obtained at the St. Barnabas Hospital about a year ago. He has also mentioned some nitrogen balance studies which evolved from his work at that time. These I have inherited.

Caloric Requirements

We have continued these investigations on the premise that the problem of maintaining the caloric requirement in the preoperative and postoperative periods must be faced. Before this could be done, some conception of the caloric requirement of the patient seemed necessary.

The basal caloric requirement may be established in several ways. The DuBois Charts[6] are simplest and are adequate for ordinary clinical purposes. It will be recalled that with the height and weight of the individual, the square meters of surface area can be read directly from the chart. The required calories per square meter for various age groups are noted on other charts. Therefore, the determination of calories required per square meter for the normal individual is a simple procedure. It has been the experience of Boothby[2] and others that estimations of this nature are usually correct within 10 per cent.

A more accurate means of determining the caloric needs is to establish the oxygen utilization rate with the aid of the usual basal metabolic rate apparatus. With this method, the respiratory quotient is usually assumed to be approximately .84, or normal. This implies that the usual amount of each type of food is being burned. Then about .4825 would represent the required calories necessary to consume one liter of oxygen.

Even more precision may be obtained by calculating the nonprotein respiratory quotient. Then, with the Schuntz table, one can note both the exact caloric need and the quantitative analysis of the food types burned.[4] However, if one chooses to ignore this feature, the error in caloric determination is pointed out by Magnus-Levy to be not in excess of 3 per cent.[8]

For the purpose of these studies we have not routinely determined the respiratory quotient, though we did so in a few instances when alcohol was being used as the principal source of energy. Low respiratory quotients were found in such instances. High values were found when carbohydrate was the principal source of energy. We expect to investigate this aspect further and more accurately with the idea of establishing a quantitative utilization of alcohol.

We obtained a routine basal metabolic rate on the patient the morning after admission to the hospital. This method of determining the calories, for the sake of these investigative studies, should be more accurate than the estimations from the DuBois chart of normals and will automatically correct for any caloric changes due to illness. With the oxygen utilization rate known, the twenty-four-hour basal caloric requirements may be calculated:

$$\frac{(1440 \text{ minutes in 24 hours})}{T \text{ (time of this test)}} \times 4.825$$

(calories in 1 L. O_2) = Total 24-hour heat output.

TABLE I. CALCULATION OF THE CALORIC REQUIREMENT

Case	H. H.	E. J.	W. C.
Degrees Rise in Fever	1.4	1	3
Fever Requirement (8%/Deg.)	182	123	444
SDA (8%)	130	123	148
Bed Activity (30%)	490	463	556
*Basal Caloric Requirements	1635	1544	1853
TOTAL CALORIC REQUIREMENT	2427	2253	3001
*Metabolic Rate (check)	2416	2422	2925

For each degree rise in temperature, 8 per cent of the basal caloric requirements must be added. The specific dynamic action (S.D.A.) requires an additional 8 per cent of the basal calories. Bed activity has been found to require approximately 30 per cent of the basal calories. The basal caloric requirements can be calculated as indicated in the text, or actually determined on the Jones Metabolic Unit. The sum of these values represents the total caloric requirements of the individual. To determine whether or not this calculation is correct, a metabolic rate check made with the Jones Metabolic Unit can be done. In each of these cases it can be observed that the metabolic check has been accurate within 10 per cent.

*Determined on a Jones Metabolic Unit.

From this formula the daily metabolic requirements are calculated as indicated in Table I.

If the basal caloric requirement is assumed to be the same each day, then we attempt to add the other caloric requirements for the somewhat fluctuant state of the patient incident to his illness. The specific dynamic action requires an addition of between 6 to 8 per cent of the basal calories when mixed dietary elements are being utilized.[11]

The activity requirement is certainly variable, but in the usual hospital patient we have been using figures up to 30 per cent of the basal caloric requirements. This additional caloric requirement is approximately the amount of energy utilized in being sick in bed, receiving medications, enemas, intravenous infusions and so forth, as is required to attend a patient in the hospital. The use of a kymogram for more accurate determination is being considered.

The requirement which changes most from day to day is that of fever. This requirement has been established at between 5 to 10 per cent for each degree rise in fever. We have been using 8 per cent. The sum total of such requirements should be about equivalent to the caloric needs of the patient. As a check on our calculations it has been interesting to measure the speed with which a liter of oxygen is consumed during activity, the burning of food (i.e. while an intravenous infusion is running), and while the patient has a fever. Those that we have done in this fashion have agreed essentially with our predetermined calculations. Three cases are illustrated in Table I where it can be observed that our predetermined total requirements were similar to the Jones M.R. check.

In an effort to determine the effect of an operation upon the metabolic rate, we have conducted a few preliminary tests directly before and within a short time after surgery. In the few cases which we have investigated there seems to be very little difference. A hint of elevation is suggested, as indicated in Table II.

Utilization of Ethyl Alcohol for Caloric Value

Having determined the caloric requirement, the next problem is that of meeting it. It is not unusual to find a requirement of 3,000 calories, or in some instances even more. In the belief that the patients should not be deprived of these calories during illness, needed even more than in health, we have endeavored to provide them directly after an operation.

The usual routine postoperative care provides the surgical patient with clear liquids during the first twenty-four or forty-eight hours. In this there are no calories, no protein, no carbohydrates. In our patients, immediate postoperative parenteral nutrition is commenced. The full caloric, carbohydrate and nitrogen requirements are provided. As soon as the patient is able to consume food by mouth, the parenteral feedings are diminished, taking care to provide only that amount which cannot be consumed by mouth.

Since it seems rather well settled that ethyl alcohol can be utilized for energy and is high in caloric value, we have found it convenient to add it to our intravenous solutions.[12] The initial studies pertaining to the use of glucose, amino acids and alcohol, all in one solution, are to be published in a forthcoming issue of the *Journal-Lancet*.

There are various estimates as to the rate and amount of alcohol utilized by the body. According to the work of Mellanby, 10 cubic centimeters an hour is considered to be the rate of utilization.[9] Exceedingly small quantities are excreted in the urine, expired gases and other bodily secretions. This total is probably not more than 2 per cent but may increase if the dose is excessive. The established caloric value of alcohol is set at 5.6 calories per cubic centimeter as noted in Goodman and Gilman.[7]

Sixty cubic centimeters of alcohol per liter of solution has been selected for routine use in our patients. This provides 336 calories. This is added to a bottle of commercially prepared Aminosol with 5 per cent dextrose solution. This solution includes 50 grams of the essential amino acids, representing 200 calories, and 50 grams of dextrose, also representing 200 calories. The addition of alcohol provides, therefore, 736 calories per liter. Amigen has also been used, especially when sodium chloride is desired. It provides slightly less protein.

These solutions have been used in more than 400 patients without ill effect. When a greater caloric intake was desired, we have increased both the alcohol and the dextrose with no undesirable effects. Four hours is the usual time required for administration.

TABLE II. PREOPERATIVE AND POSTOPERATIVE BMR COMPARISONS

Patient	BMR (Preoperative)			BMR (Postoperative)		
	O_2 Rate (Min.)	Calories	Date	O_2 Rate (Min.)	Calories	Date
1. W. C.	3¾	1853	12– 3–47	3½	1986	1– 3–48
2. B. C.	4¼	1635	12– 4–47	4½	1544	12– 5–47* Sedated
3. E. M.	6⅜	1108	12– 8–47	5⅝	1255	12–10–47
4. B. G.	5	1390	12– 8–47	5	1390	12–11–47
5. M. K.	4⅛	1684	12–29–47	4⅛	1684	12–30–47
6. F. T.	5	1390	12–31–47	4½	1544	1– 2–48
7. G. M.	5	1390	1– 2–48	4	1738	1– 3–48** Nauseated, sedated

* Temperature 100.2°
** Temperature 99.8°

A vein in the forearm or leg is used in preference to the antecubital vein in order to eliminate fatigue incident to keeping the arm extended upon a board.

Blood alcohol levels have been determined during the course of administration, and an attempt has been made to correlate the clinical manifestations. We have observed these patients passing through several clinical phases as the rate of administration is increased. Mild sedation and mild analgesia are observed first. Then the patient passes into a state of restlessness, but as the rate of administration continues, and presumably as the concentration in the blood increases, a soporific effect is manifest. Blood alcohol levels have been obtained after the method of Bodansky and Cavett.[5] Ten miscellaneous patients receiving routine Aminosol, glucose and alcohol showed a similar graphic picture.

TABLE III. SCALE OF TOXIC SYMPTOMS WITH VARIOUS BLOOD ALCOHOL LEVELS
(Modified from Miles[10])

Per Cent Alcohol in Blood	*Symptoms*
0.010	Head clearing. Freer breathing. Mild tingling.
0.020	Slight fulness and mild throbbing at back of head. Touch of dizziness. Fatigue relief. Tone of pleasantness.
0.030	Mild euphoria. No sense of worry.
0.040	Lots of energy for things he wants to do. Talks much and loudly. Hands tremble slightly. Clumsy. Not embarrassed. Glib and flippant remarks.
0.050	Normal inhibitions practically cut off. Long winded. Blunting of self-criticism.
0.070	Feelings of remoteness. Odd sensations on rubbing hands together or of touching of face. Rapid strong pulse and breathing. Amused at own clumsiness. Upsets chair on rising.
0.100	Staggers very perceptibly. Talks to himself. Difficulty clothing himself. Fumbling of keys. Feels drowsy, sings loudly.
0.200	Needs help to walk or undress. Easily angered. Shouts, groans, weeps by turns. Is nauseated. Poor control of urination.
0.300	In stuporous condition. Very heavy breathing. Sleeping and vomiting by turns. No comprehension of language. Strikes wildly at person trying to assist.
0.400	Deep anesthesia, may be fatal.

When the rate of alcohol administration was purposely maintained close to 15 cubic centimeters per hour:

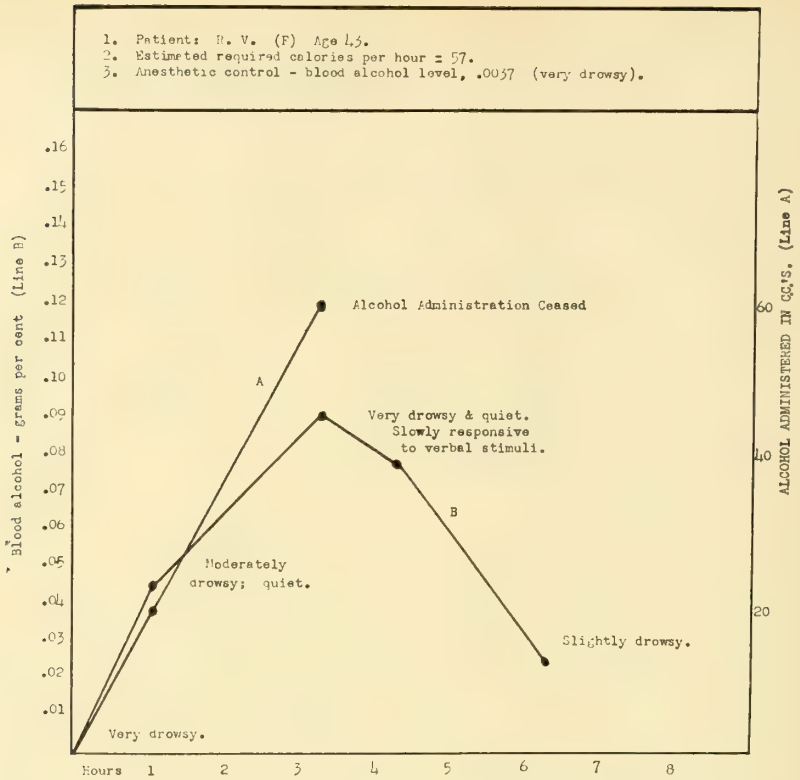


Fig. 1. The blood alcohol levels resulting from the administration of 60 c.c. of ethyl alchohol intravenously.

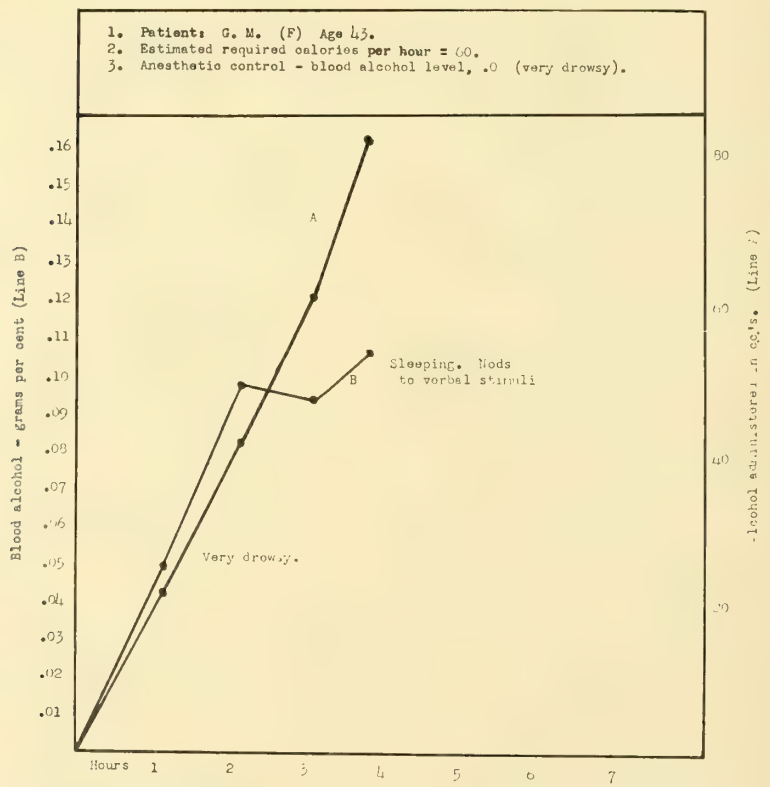


Fig. 2. The blood alcohol levels resulting from the administration of 80 c.c. of ethyl alcohol intravenously.

TABLE IV. PATIENT P. K., MALE, AGED FIFTY-FOUR

Weight 117 pounds (53 kilo.).
Estimated metabolic requirement 1873
Protein requirement @ 1 gm./kilo. = 53 gm.**
N_2 requirement @ 0.4 gm./kilo. = 21**

Date	9-26-47	27	28	29	30	10-1-47	2	3	4	5	6
Total Calories	2208	2208	2208	2208	1595*	2658*	2658*	1020			
Grams Protein	150	150	150	150	83.7	171.2	171.2	158.7			
% Calories from Protein	25	25	25	25	21	24	24	62			
Urine N_2 in grams	14	14.7	12.6	12.7	15.4	lost	14.6	27.4			
N_2 Intake	24	24	24	24	13.4	27.4	27.4	25.4			
N_2 Balance	+10	+9.3	+.4	+11.3	—2	—	+12.8	—2			
Weight	118	119.5	119.5	118.5	—	—	—	—	—	—	121.0
Urine Creatinine	2.3	2.9	2.5	2.7	2.6	lost	1.4	2.6			
Blood Protein	6.7									6.2	

* 500 c.c. of citrated whole blood contributed to these calories, protein and nitrogen intake.
It will be noted a strong positive nitrogen balance was maintained when the intake was 2208 calories the first 4 days. On 10-3-47 it was negative with low total calories and very high protein per cent.
** Though they do not coincide, both of these requirements have been cited in the medical literature.

1. The grams per cent of alcohol rose rapidly, leveling off in approximately two hours.

2. The levels seemed to vary with the size of the patient. We are endeavoring to correlate the utilization of alcohol with the caloric requirement.

3. The average concentration after attaining a level at this rate of administration was approximately .05 grams per cent.

4. These low levels tend to remain effective in producing adequate sedation for several hours after discontinuing, for ordinary purposes.

5. If the administration rate is similar to the utilization rate, the levels tend to remain constant.

Table III, copied from Goodman and Gilman, indicates the symptoms from increasing blood alcohol levels.

In the alcohol blood levels of approximately 0.1 to 0.15, the patient seems distinctly depressed, particularly if associated with sodium luminal. This combination has seemed rather satisfactory for pain relief. In the lower blood alcohol level range, it has been necessary to occasionally use sodium salicylate in order to obtain relief of pain.

Figures 1 and 2 illustrate the administration of alcohol on a caloric basis. Sufficient calories are offered in three hours to cover the basal needs for 5.6 hours. The peak levels here seem desirable for the immediate postoperative period. In Figure 2 we note a secondary rise when the rate is increased.

It will be observed that the range of blood alcohol level is lower than the average intoxication level and far indeed from the lethal level. Recently we have found that higher levels might be indicated to afford more pain relief on the first postoperative day. The rate of drip of this solution must be regulated lest too rapid infusion of amino acids produce nausea and vomiting. In raising the blood alcohol levels higher, we have, therefore, chosen to add more alcohol to the Aminosol or to administer more rapidly solutions of lower alcohol percentage.

Utilization of Amino Acids for Nitrogen Metabolism

One liter of 5 per cent Aminosol provides the equivalent of 50 grams of utilizable protein having a nitrogen value of 8 grams. We have conducted nitrogen balance studies and have demonstrated repeatedly the ability of the body to maintain a stron gpositive nitrogen balance with 2,000 or 3,000 cubic centimeters of glucose, Aminosol and alcohol (each 5 per cent). Three liters of this solution provides 2,208 calories and 24 grams of nitrogen. Nitrogen requirement has been established by other investigators as 4 grams per kilogram. A 154-pound man (70 kilograms) would then require 28 grams of nitrogen.[1]

Variations in the carbohydrate, amino acids and calories (as provided by alcohol) have clearly demonstrated to us that a strong positive nitrogen balance is difficult to maintain unless adequate calories are available, even though the nitrogen intake exceeds considerably the normal requirements. Nitrogen equilibrium may be obtained with a relatively low caloric intake and normal nitrogen intake, but that does not allow much opportunity for rebuilding of nitrogen-containing tissues. Healing tissues require abundant nitrogen, and in order that this may obtain, a strong positive nitrogen balance must be evident.

Some of the above observations are illustrated in Table IV, where it will be observed that a strong positive nitrogen balance was maintained when the caloric intake was 2,208 as indicated for the dates September 26, 27, 28, and 29. On September 3, 1947, a negative nitrogen balance resulted when total calories were insufficient though the percentage of calories derived from protein and the grams of protein were both increased above the usual physiologic requirements.

The study of other protocols led us to believe that, presuming the caloric intake to be sufficient, approximately 25 or 30 per cent of the calories derived from protein provide optimum physiologic economy. In other words, if the normal amount of nitrogen is provided and protected with added glucose and calories, a relatively low nitrogen quantity is excreted and a high positive nitrogen balance is obtained. The retained nitrogen can be utilized for tissue repair. It is important that a strong positive nitrogen balance be maintained during the healing phase of any disease. Cannon,[3] in the *Journal of the American Medical Association* has pointed out on the basis of his experimental studies that "tissue synthesis requires enough calories to facilitate the conversion of amino acids into tissue protein, but above a certain level additional calories are superfluous." Our studies have been leading us to the same conclusion.

Utilization of Glucose

It is not necessary to discuss the utilization of glucose at this time, as these studies are adequately dealt with in the medical literature. It is well to recall, however, that glucose is essential for the proper metabolism of carbohydrate, and proteins, without which protein must be utilized to provide a deficiency of glucose before it can be used for tissue repair. If given slowly, glucose can be consumed in greater quantities than it is practical to administer. Woodyatt demonstrated that, if given slowly, .9 gram per kilogram per hour could be utilized by the normal body for an indefinite interval.[1] It can be administered in 10 per cent concentrations for short periods of time and in 7.5 per cent concentration for longer periods of time without producing thrombosis of the vein.[3] At the rate at which we have administered it (5 per cent—7.5 per cent—10 per cent) we have noticed no appreciable loss of glucose through the urine. A 5 per cent solution administered over four hours provides approximately .2 gram per kilogram per hour for a 150-pound man.

Comments

Our clinical observations suggest that by maintenance of full caloric and nutrional need, smoother convalescence and a more rapid feeling of well-being is obtained than when the patient is placed on a routine postoperative, clear, liquid, soft, light and full diet.

Vitamin C and the B complex factors are administered when oral nutrition is inadequate. Experimental studies have shown rapid depletion of these vitamins when they are not obtained in a daily diet. Experiments have also shown the importance of these vitamins in protein metabolism and wound healing.

These studies are still somewhat in the nature of a preliminary report, in that we have not yet carried out these investigative studies on enough individual cases. However, our clinical observations have been adequately convincing so that we feel free in recommending this method of preoperative and postoperative nutrition for all patients who must otherwise suffer the effects of semistarvation for a week or 10 days.

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THE RATIONALE OF ELIMINATING STARVATION POSTOPERATIVELY

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Dr. Strickler has indicated a statistically significant difference in the incidence of a certain number of postoperative complications and sequelae. He has indicated that morphine has contributed to some of such sequelae. On this basis we have undertaken some special studies relative to the mechanism of gas pain colic.

Preoperative and postoperative flat roentgenograms of the abdomen revealed gas in both the small and large bowels within a few hours after operation, whereas it was not evident before operation. This finding was constant in all cases whether the patient had received morphine or not.

In the morphine group we found areas of segmental spasm in the colon in eight out of ten cases. In the no-morphine group there were no segmental spasms.

We then checked with scout films a number of patients presenting gas pain colic, some of which were included in the above 10 cases, and in these we found segmental spasm.

Benzedrine sulphate, 10 milligrams, was administered to patients with gas pain colic and within a few minutes the segmental spasm disappeared. Gas pain colic was relieved and the gas was rapidly dissipated. This suggested to us that gas pain colic involved a mechanism wherein an area of segmental spasm develops, upon which is superimposed a peristaltic rush. Morphine, because of its tendency to increase the tone of the bowel, also may produce areas of segmental spasm, thereby contributing to the increased incidence of gas pain colic. Benzedrine has therefore been used to relieve gas pain colic. Gas pain colic and gas distention must be differentiated.

In an effort to provide a substitute for morphine to relieve postoperative discomfort, we used intravenous alcohol. In the past eight or ten months we also have provided glucose and amino acids, each for its nutritional and caloric value. This led to a study of nitrogen balance.

Dr. Orr has described some of the investigations we have undertaken at St. Barnabas Hospital pertaining to preoperative and postoperative nutrition, and he also has described the technique of administration of glucose, amino acids and alcohol. Some of this still is in the nature of a preliminary report. Further substantiation will be needed. However, these data have helped us form opinions, and we believe we are justified in recommending them to you even at this early stage.

Physiologic Properties and Nutritional Values of Alcohol

Alcohol provides sedation and calories. The determination of alcohol levels of the blood, in association

This discussion, based on investigative studies made at the St. Barnabas hospital, has been made possible through the generosity of the hospital board, the hospital administration and the professional personnel, all of whom have contributed cheerfully of their encouragement, money or effort.

TABLE I

Period	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI
Av. Total Calorie Intake per day	2646	2501	3207	1936	1392	1996	2969	3108	2116	432	2178	1629	2333	1748	2181	2208
Av. Calories from Protein	369	362	472	294	240	362	570	600	400	87.6	420	368	521	443	560	600
% Calories from Protein	13.9%	14.4%	14%	15%	17%	18%	19%	19%	19.8%	20.3%	20%	22.5%	22.3%	25%	25%	27%
Av. Nitrogen Intake in grams	14.66	14.45	18.9	12.4	9.6	14.5	22.4	24	16	3.5	16.9	14.7	20.9	17.8	22.4	24
Av. Nitrogen Output in grams	12.77	12.16	4.5	19.48	9.9	10.8	14.2	11.77	12.6	11.1	9.3	9.6	15.1	14.5	6.1	11.46
Nitrogen Balance	+1.89	+2.29	+14.4	−7.58	−.3	+3.7	+8.2	+12.23	+3.4	−7.6	+7.6	+5.1	+5.8	+3.3	+16.3	12.54
Temperature	99.7°	101.4°	101.8°	100.8°	100.6°	100°	102.8°	101.4°	101°	102.2°	100°	101.8°	102.6°	101.6°	101.6°	102.4°
Calculated caloric requirement—2071																

Male, aged fifty-nine, weight 71 kilograms. Each period represents either two or three days in which the caloric and protein intake were similar. The figures represent the average values, nitrogen balance studies having been made every day.

with subjective symptoms and objective findings, suggests that the first effect of alcohol is mild sedation, obtained when the blood level reachs .04 to .08 grams per cent. In most instances this is sufficient to relieve the patient of the immediate postoperative distress.

After the patient returns to his bed from the operating room and is still semiconscious, he is given his initial intravenous glucose, amino acids and alcohol. In some instances we eliminate the amino acids from the initial dose, because of its tendency to produce nausea in a patient who already is nauseated from his anesthetic.

The rate of administration is increased for the first twenty or thirty minutes so that the patient receives approximately 15 or 20 cubic centimeters of alcohol during this period. This is done with the idea of promoting sedation. Thereafter, the rate of administration is decreased and maintained at a constant rate throughout a full four-hour period.

Most patients obtain sufficient sedation and analgesia from this rate of administration. A few have received intravenous sodium salicylate in addition, so as to obtain the synergistic effect of alcohol and salicylate.

We are interested in sedation and analgesia for only the first twelve or twenty-four hour period. Thereafter, patients rarely require additional analgesia.

After sedation has been obtained, we then are interested in this solution for its nutritional value. Alcohol provides approximately 6 calories per cubic centimeter of immediate energy. It thereby spares reserve stores of carbohydrate and protein. Alcohol is metabolized at the rate of approximately 10 cubic centimeters an hour. Only a small quantity is excreted unchanged. The excess, if it is given too rapidly, is held in the blood stream and the tissues and, depending upon its concentration, may produce sedation, analgesia, narcosis, intoxication, stupor and death. The sedative and analgesic, narcotic and intoxicating dose is sufficiently far removed from the lethal dose to make it safe for therapeutic purposes.

Alcohol increases capillary dilatation. It is said to act as an antispasmodic in the gastrointestinal tract, contributing thereby to the elimination of segmental spasm and gas pain colic. It has been used clinically for its beneficial effects upon peritonitis and paralytic ileus. It increases the depth of respiration, thereby contributing to eliminate pulmonary complications. It promotes mild diuresis. It causes no significant change in the blood pressure or pulse.

The undesirable effects of alcohol, namely intoxication, stupor and death, are easily avoided clinically by controlling the rate of administration. Its intravenous administration produces no "hang-over" symptoms.

With these desirable features of alcohol as a physiologic drug and a source of easy energy, we have used it routinely in all our patients postoperatively with the above thought in mind.

Nutritional Value of Amino Acids

Numerous investigations have demonstrated recently the value of maintaining a positive nitrogen balance in the sick individual, both preoperatively and postoperatively. A high protein, adequate calorie diet is the first requisite in this regard. It has been noted repeatedly in medical literature that the difficulty in maintaining adequate nutrition in the individual who cannot eat is that of providing sufficient calories without, at the same time, providing too much fluid.

Six thousand cubic centimeters of fluid are needed to provide 2,400 calories, using 5 per cent glucose and 5 per cent amino acids. Increasing the concentrations of glucose and amino acids to decrease the fluid content results in undesirable sequelae: thrombosis from high concentrations of glucose; nausea, flushing, giddiness from greater concentrations of amino acids. By adding alcohol to the glucose-amino acids solution, caloric value can be doubled almost. In this manner a patient can be given his full caloric, nitrogen and glucose requirements in 3,000 cubic centimeters or less of intravenous solution.

I am not convinced that forced or tube feedings can provide these nutritional requirements any better than can be done by our intravenous method.

Dr. Orr has demonstrated the protocol of a patient in whom nitrogen balance studies were conducted, pointing out the need for providing sufficient calories in order to maintain a positive nitrogen balance.

I should like to emphasize the need of providing also an adequate percentage of calories derived from protein as indicated in the protocol of a man, aged fifty-nine, of 71 kilograms weight, who suffered from carcinoma of the colon (Table I). He was provided with adequate calories and at least 1 gram of protein per kilogram body weight. In periods I and II, where approximately 14 per cent of the calories were derived from proteins, he was barely in nitrogen balance, and, as in period IV, when the total calories were decreased, he showed a negative nitrogen balance, even though the grams of protein were adequate and the percentage of nitrogen slightly higher. In period III where the percentage of protein was kept the same while the calories were in-

creased, a strong positive nitrogen balance developed. Comparing this with period VIII, in which the calories were kept essentially the same but the percentage of protein was increased, a strong positive nitrogen balance still developed. If the calories are again decreased, though the protein percentage continues to remain high, the nitrogen balance also decreases, as indicated by comparing period VIII with periods IX and XIV.

It will be noted that when the caloric intake dropped below the calculated caloric requirement (2071C), the patient was in negative nitrogen balance, as indicated in periods IV, V and X.

In periods VI and XII, the caloric intake was inadequate, but the protein intake was high. In these two periods, the patient was barely in positive nitrogen balance. When these two periods are compared with periods III, XV and XVI, in which both the calories and protein were high, it is noted that a strong positive nitrogen balance developed.

The study of these nitrogen balance figures, with varying calories and percentages of protein, presuming both to be nutritionally adequate under normal conditions, have convinced us that the optimum nutritional requirement for the sick individual should contain the full metabolic caloric requirements within which 25 or 30 per cent of the calories should be derived from protein. The optimum daily requirement of protein in health has been established at approximately 1 gram per kilogram of body weight (70 grams for a 154-pound man). In sickness, this requirement may need to be doubled. Certainly, it should not be decreased.

Experiments cited in the medical literature have shown quite convincingly that tissues heal more slowly and inadequately if protein requirements are not maintained. Nitrogen balance studies have indicated that sick individuals and almost all postoperative patients obtain very rapidly a negative nitrogen balance. This may be due both to an inadequate protein or caloric intake and to the excess destruction of protein incident to the illness. We have observed that when the fever increases, the nitrogen balance decreases, as illustrated by comparing periods XV and XVI.

It is almost routine in many hospitals to prescribe no food for the first twenty-four or forty-eight postoperative hours. On the first postoperative day (twenty-four hours after operation) the patient is allowed clear liquids, in which there are no calories and no grams of protein. On the second postoperative day a general liquid diet provides 903 calories and 24 grams of protein. On the third postoperative day a soft diet provides 1,510 calories and 41 grams of protein. On the fifth postoperative day a regular diet provides 2,259 calories and 70 grams of proteins. Presuming that the patient eats all that is offered, he receives inadequate protein throughout his entire hospital stay. These hospital diets provide approximately 10 per cent of the calories from protein. This is only a few points higher than the lowest protein diet that a dietician was able to devise when we asked for such for one very co-operative young lady in the interest of these studies. I presume that we might have tried Crisco and corn syrup.

By the time the patient has reached a full diet stage on the usual postoperative routine, he has been so severely starved of protein that it may require ten or fourteen days before he again regains his nutritional balance. It is no wonder that a patient feels so exhausted and lacks energy and has lost weight when he leaves the hospital.

Comments and Conclusions

We believe that the use of morphine preoperatively is entirely superfluous, and that its postoperative use has become much too routine. There are so many undesirable features of morphine which can be eliminated only if the use of morphine is discontinued. Satisfactory analgesia can be obtained in most instances with the use of intravenous alcohol and non-narcotic analgesics.

No significantly undesirable features have been produced with the intravenous use of glucose, amino acids and alcohol.

Routine hospital diets are shamefully deficient in protein.

On the basis of our nitrogen balance studies, we believe that nitrogen equilibrium can be obtained on a relatively low caloric intake, if adequate nitrogen is given. It is difficult, however, to maintain a strong positive nitrogen balance, unless adequate calories are provided to cover the metabolic needs. When this is done, a surplus of nitrogen can be retained. This is necessary for healing processes, whenever the need arises from surgical or medical diseases.

If adequate nutrition (protein, carbohydrate and calories) cannot be eaten by the convalescent individual, these should be supplemented with intravenous feedings.

We believe, as we shall eventually endeavor to prove, that patients who have been placed on this regime have a feeling of well-being within twenty-four hours after operation and present a lower incidence of morbidity while in the hospital, because they have not been deprived of adequate nutrition for any period of time.

Must we continue to keep our patients in a state of constant semistarvation when we already know from numerous experiments and clinical observation that it is not beneficial to the healing and feeling of well-being in our patients?

Discussion

DR. L. H. FOWLER: Dr. Rice, have you noticed any problem in the nursing care of these patients given alcohol? I have heard that they have been discouraged because of the difficulties in nursing care.

DR. CARL RICE: I have noticed problems with nurses. The nurses don't like to measure anything, but that might be our fault, since we require the nurse to measure and save urine output, to weigh daily caloric intake, and to do numerous other minor chores.

DR. D. MACKINNON: I would like to ask if the admission and discharge weights are the same—if there is any correlation between nitrogen balance and weights?

DR. CARL RICE: We found a correlation in a large series. We have kept daily weight records of patients who receive this medication and have observed a gain in weight during the hospital stay. We observed a 10-

pound gain in weight for one individual who received nothing but intravenous feeding for over three weeks.

Dr. Arthur Zierold: I believe such a paper as this deserves an extended discussion as it represents a tremendous amount of work and is one of the few scholarly attacks upon what has been a clinical problem heretofore. I most heartily agree with the basic ideas Dr. Rice has advanced and have attempted to follow them myself.

When Key's work on starvation is published we shall have a considerable fund of information which will aid us in measuring the effect of nitrogen balance. The well-nourished individual will probably tolerate a longer period than we believe at this time without a critical loss of his tissue protein. That is one thing. Another thing is that we have difficulty in determining a base line. We have no good means of determining the state of the individual's tissue protein unless we go to the extent of taking a specimen, digesting it, analyzing it and determining exactly what his state of nutrition is, because plasma protein tends to be constant at rest. We have no good base line and Dr. Rice had to accept an arbitrary figure and take this as normal without any exact measurement. We all know that most of our patients get along in spite of the nutrition we have forced upon them and that is in some small way evidence that the average individual will tolerate starvation for a considerable time without arriving at a critical level. In the average case, it is probable that it will not be necessary to use parenteral means to maintain positive nitrogen balance. While it is highly desirable that the individual maintain positive nitrogen balance throughout his period of stay in the hospital, again let me say that the majority of the individuals who have not suffered exhaustive disease, who have not had considerable weight loss (excluding infants as well as the elderly), are individuals in the middle decades of life and are in a good state of nutrition. They will not need parenteral nutrition unless there is protracted starvation. For some time at the Minneapolis General Hospital we have fed exhausted patients beef plasma by mouth and found that a good means of measuring nitrogen balance, and I am inclined at the present time to attempt to maintain that by feeding amino acids and other proteins by mouth and by tube if possible. My patients are fed that after operation, sometimes the day of operation, and you expect them to return to a normal diet at once. They have no liquid diet but a solid diet, except the patients who have operations on the stomach or upper intestinal tract. Except in a very few instances, it is not necessary to starve these patients more than four days and most of the patients will tolerate that.

Use of glucose has been mentioned. There is a phase of glucose action which I don't believe has been noted commonly, and that is its effect on smooth muscle. If you will take a piece of intestine in the laboratory and put that on a nerve muscle and saturate that in an isotonic glucose solution, that muscle will relax at once. That is experimental evidence of its effect on smooth muscle. Clinical evidence can be demonstrated in your own children. They will eat sweets, become satiated and the musculature will relax. Another illustration is in operations on the gastrointestinal tract. You will notice during operation that the peristalsis will become much more noticeable, and if you will give that individual a little concentrated glucose, you will notice the gastrointestinal musculature will relax and become quiet. I mention this because I believe that there is evidence to indicate that we precipitate ileus by repeated and excessive amounts of glucose.

Now it is necessary to use that glucose in the ultization of amino acids. I am very much interested in the use of alcohol because I have been casting around for several years for something to substitute for morphine because it gives rise to what the patient calls "gas pains." I don't like that term. It implies distortion where no distortion exists. It is probably spasm in the morphine half of the morphine compound. I would be delighted if we could use alcohol as a sedative to do away with morphine after operation. There should be very little sedation. Early ambulation and early feeding can dispense with hospital diets of fifty to 100 years ago, as they are certainly not adequate or suited to the surgery we practice today.

Dr. Hamlin Mattson: I would like to ask Dr. Rice if nitrogen balance figures were broken down for early ambulation or prolonged bed rest. Bed rest alone can induce negative nitrogen balance. Was that considered in the study?

Dr. Carl Rice: No. We did not break down the figures as to early ambulation. When giving the patients early feeding, we found it difficult to hold them in bed.

Dr. L. C. Culligan: I would like to ask with reference to cost of supplying patients with 2 to 3 liters of nitrogen with added alcohol. It is my offhand opinion that it would cost $3 or $4 per liter, perhaps up to $5. Am I wrong in that? In other words, it would cost $12 to $15 per day to give the patient 2 to 3 liters of fluid. The use of alcohol in that way is tied up with the utilization of vitamin B in the body. I wonder whether adequate doses of vitamin B and vitamin C are supplied?

Dr. Carl Rice: If the patient feels well in twenty-four hours, the cost is little, and the feeling of well being on the first postoperative day is worth the cost. Vitamins B and C are provided as described in the text of the article. The patient is given intravenous vitamins B and C every day that parenteral feedings are used.

Dr. L. H. Fowler: I would like to ask whether there is any correlation between the amount of alcohol given by mouth and that by vein. Couldn't it be given by mouth as well?

Dr. Carl Rice: Alcohol taken by mouth produces a "hang-over." Whiskey, 84 proof, given by mouth provides 42 per cent alcohol. Intravenously, 95 per cent alcohol is used with aminosal or amigen. After an operation, the gastrointestinal tract is upset already, and it is my impression that the gastrointestinal tract does not take food well for twenty-four hours, so we let patients go without food by mouth and provide them with parenteral calories for the first twenty-four-hour period. In 95 per cent of our patients, that is all they require. After that we put the patients on a full diet. If the patient is not eating the caloric requirement, we give him another bottle intravenously. These studies were made on long-time hospital cases where they couldn't eat and we had to provide them nutrition.

Dr. E. H. Henrikson: If gas pains should persist after benzedrine sulphate intravenously, how long before you should repeat it, and should you use phenobarbital to offset benzedrine?

Dr. Carl Rice: We have repeated benzedrine in about four hours. In most instances, benzedrine gave relief in fifteen minutes to one hour. Benzedrine given intravenously produces a slight rise in blood pressure. It is well to use some sedative after having given benzedrine, in order to counteract the wakeful effect of benzedrine.

Dr. E. Benjamin: Are the alcohol and amino acids available in a commercial preparation?

Dr. Carl Rice: Yes. The glucose and amino acids are available commercially. We obtain alcohol out of the jug from the drug room, using the 95 per cent strength, merely adding it to the commercially prepared amigen or aminosal.

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SHERBURNE COUNTY
A. B. Roehlke, M.D. ..... Elk River
E. F. Clothier, M.D. ..... Elk River
Gordon H. Tesch, M.D. ..... Elk River

SIBLEY COUNTY
Rolf Hovde, M.D. ..... Winthrop
Thomas Martin, M.D. ..... Arlington
D. C. Olson, M.D. ..... Gaylord

STEARNS COUNTY
A. H. Zachman, M.D. ..... Melrose
C. F. Brigham, M.D. ..... St. Cloud
W. T. Wenner, M.D. ..... St. Cloud

STEELE COUNTY
D. E. Morehead, M.D. ..... Owatonna
L. V. Berghs, M.D. ..... Owatonna
D. H. Dewey, M.D. ..... Owatonna

STEVENS COUNTY
E. T. Fitzgerald, M.D. ..... Morris
M. L. Ransom, M.D. ..... Hancock

SWIFT COUNTY
Hans Johnson, M.D. ..... Kerkhoven
C. L. Scofield, M.D. ..... Benson
E. J. Kaufman, M.D. ..... Appleton

TODD COUNTY
M. E. Mosby, M.D. ..... Long Prairie
J. M. Cook, M.D. ..... Staples
E. J. Simons, M.D. ..... Swanville

TRAVERSE COUNTY
N. F. Doleman, M.D.* ..... Tintah
A. L. Lindberg, M.D. ..... Wheaton

WABASHA COUNTY
T. G. Wellman, M.D. ..... Lake City
B. J. Bouquet, M.D. ..... Wabasha
E. W. Ellis, M.D. ..... Elgin

WADENA COUNTY
L. T. Davis, M.D. ..... Wadena
H. G. Bosland, M.D. ..... Verndale
C. H. Pierce, M.D. ..... Wadena

WASECA COUNTY
O. J. Swenson, M.D. ..... Waseca
H. M. McIntire, M.D. ..... Waseca
B. J. Gallagher, M.D. ..... Waseca

WASHINGTON COUNTY
J. W. Stuhr, M.D. ..... Stillwater
E. R. Samson, M.D. ..... Stillwater

WATONWAN COUNTY
O. B. Bergman, M.D. ..... St. James
F. L. Bregel, M.D. ..... St. James

WILKIN COUNTY
W. E. Wray, M.D. ..... Campbell

WINONA COUNTY
Herbert Heise, M.D. ..... Winona

WRIGHT COUNTY
T. J. Catlin, M.D. ..... Buffalo
L. H. Bendix, M.D. ..... Annandale
R. D. Thielen, M.D. ..... St. Michael

YELLOW MEDICINE COUNTY
E. R. Hudec, M.D. ..... Echo
P. G. Schmidt, Jr., M.D. ..... Granite Falls

(No committees have been appointed in the following counties: Cook and Lake of the Woods.)

*Deceased.

COUNCILOR DISTRICTS

DISTRICT NO. 1
R. L. J. Kennedy, M.D. ..... Rochester
Counties—Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona.

DISTRICT NO. 2
L. L. Sogge, M.D. ..... Windom
Counties—Cottonwood, Faribault, Jackson, Martin, Murray, Nobles, Pipestone, Rock.

DISTRICT NO. 3
L. G. Smith, M.D. ..... Montevideo
Counties—Big Stone, Brown, Chippewa, Kandiyohi, Lac Qui Parle, Lincoln, Lyon, Meeker, Pope, Redwood, Stevens, Swift, Traverse, Yellow Medicine, Watonwan.

DISTRICT NO. 4
A. E. Sohmer M.D. ..... Mankato
Counties—Blue Earth, Carver, Le Sueur, McLeod, Nicollet, Renville, Scott, Sibley, Waseca.

DISTRICT NO. 5
E. M. Hammes, M.D. ..... Saint Paul
Counties—Anoka, Chisago, Dakota, Isanti, Kanabec, Mille Lacs, Pine, Ramsey, Sherburne, Washington.

DISTRICT NO. 6
O. J. Campbell, M.D. ..... Minneapolis
Counties—Hennepin, Wright.

DISTRICT NO. 7
W. W. Will, M.D. ..... Bertha
Counties—Aitkin, Beltrami, Benton, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Morrison, Stearns, Todd, Wadena.

DISTRICT NO. 8
W. L. Burnap, M.D. ..... Fergus Falls
Counties—Becker, Clay, Douglas, Grant, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Ottertail, Pennington, Polk, Red Lake, Roseau, Wilkin.

DISTRICT NO. 9
F. J. Elias, M.D. ..... Duluth
Counties—Carlton, Cook, Itasca, Lake, St. Louis.

Woman's Auxiliary to the Minnesota State Medical Association

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Mrs. Harold F. Wahlquist	*President-Elect*	Minneapolis
Mrs. Melvin S. Henderson	*Past President*	Rochester
Mrs. H. E. Bakkila	*First Vice President*	Duluth
Mrs. Mark E. Ryan	*Second Vice President*	St. Paul
Mrs. W. A. Merritt	*Third Vice President*	Rochester
Mrs. A. E. Cardle	*Fourth Vice President*	Minneapolis
Mrs. H. W. Satterlee	*Recording Secretary*	Lewiston
Mrs. George E. Penn	*Treasurer*	Mankato
Mrs. F. C. Westerman	*Auditor*	Montgomery
Mrs. Haddon M. Carryer	*Historian*	Rochester
Mrs. S. S. Hesselgrave	*Parliamentarian*	Center City

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Mrs. S. A. Slater	*Second District*	Worthington
Mrs. O. B. Fesenmaier	*Third District*	New Ulm
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Mrs. R. N. Jones	*Seventh District*	St. Cloud
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CHAIRMEN OF COMMITTEES

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Archives—Mrs. Martin Nordland ..... Minneapolis

Auxiliary Posters—Mrs. A. B. Rosenfield ..... Minneapolis

Bulletin—Mrs. C. L. Oppegaard ..... Crookston

Cancer Board Representative—Mrs. Mark E. Ryan ..... St. Paul

Editor, Minnesota Medicine—Mrs. John Dordal ..... Sacred Heart

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Hygeia—Mrs. A. M. Watson ..... Royalton

Legislation—Mrs. F. S. McKinney ..... Minneapolis

Organization—Mrs. Harold F. Wahlquist ..... Minneapolis

Pledge of Allegiance and Auxiliary Pledge of Loyalty—Mrs. V. E. Quanstrom ..... Brainerd

Postwar Planning—Mrs. Claude C. Kennedy ..... Minneapolis

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Public Relations—Mrs. Hobart Johnson ..... Mankato

Resolutions—Mrs. Neil Dungay ..... Northfield

Revisions—Mrs. C. C. Allen ..... Austin

Social—Mrs. Harold G. Benjamin ..... St. Louis Park

In Memoriam Service—Mrs. A. T. Laird ..... Duluth

County Society Roster

Key to Symbols: *Deceased; † Affiliate, Associate or Life Member; ‡ In Service; §Wife is Member of Woman's Auxiliary.

BLUE EARTH COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of each month
Annual meeting in May
Number of Members: 41

President
Butzer, John A. ..... Mankato

Secretary
§Vezina, J. C. ..... Mapleton

§Andrews, R. N. ..... Mankato
Batdorf, B. N. ..... Good Thunder
§Butzer, J. A. ..... Mankato
§†Dahl, G. A. ..... Mankato
§Denman, A. V. ..... Mankato
†Edwards, R. T. ..... Big Fork, Mont.
Eustermann, J. J. ..... Mankato
§Franchere, F. W. ..... Lake Crystal
§Fugina, G. R. ..... Mankato
§Haes, J. E. ..... Mankato
Hankerson, R. G. ..... Minnesota Lake
§Hassett, R. G. ..... Mankato
§Hoeper, P. G. ..... Mankato
§Howard, E. G. ..... Mapleton
§Howard, M. I. ..... Mankato
Huffington, H. L. ..... Mankato
§Jones, O. H. ..... Mankato
§Juliar, R. O. ..... St. Clair
§Kaufman, W. B. ..... Mankato
§Kearney, R. W. ..... Mankato
§Kemp, A. F. ..... Mankato
§Koenigsberger, Chas. ..... Mankato
Liedloff, A. G. ..... Mankato
Luck, Hilda ..... Mankato
§Macklin, W. E. ..... Mankato
§Mickelson, J. C. ..... Mankato
§Miller, V. I. ..... Mankato
§Morgan, H. O. ..... Amboy
§Penn, G. E. ..... Mankato
§Samuelson, L. G. ..... Mankato
§Schlesselman, J. T. ..... Mankato
†Schmidt, P. A. ..... Good Thunder
§Schmitz, A. A. ..... Mankato
§Sjoding, J. D. ..... Mankato
§Smith, P. M. ..... Lake Crystal
§Sohmer, A. E. ..... Mankato
§Stillwell, W. C. ..... Mankato
Stone, N. F. ..... Mankato
§Troost, H. B. ..... Mankato
§Vezina, J. C. ..... Mapleton
Wentworth, A. J. ..... Mankato
Williams, H. O. ..... Lake Crystal

BLUE EARTH VALLEY MEDICAL SOCIETY

Faribault and Martin Counties
Regular meetings, first Thursday of month
Annual meeting, first Thursday in November
Number of Members: 33

President
Virnig, M. P. ..... Wells

Secretary
Boysen, Herbert ..... Madelia

§Armstrong, R. S. ..... Winnebago
§Bailey, R. B. ..... Fairmont
Barr, W. H. ..... Wells
§Boysen, Herbert ..... Madelia
§Burmeister, R. O. ..... Welcome
§Chambers, W. C. ..... Blue Earth
Cooper, M.D. ..... Winnebago
§Drexler, G. W. ..... Blue Earth
†Farrish, R. C. ..... Sherburn
§Gardner, V. H. ..... Fairmont
§Grogan, J. M. ..... Ceylon
Hanson, Lewis ..... Frost
§Heimark, J. J. ..... Fairmont
†Holm, P. F. ..... Wells
Hunt, R. C. ..... Fairmont
§Hunt, R. S. ..... Fairmont
Hunte, A. F. ..... California
§Krause, C. W. ..... Fairmont
McGroarty, J. J. ..... Easton
Medlin, C. F. ..... Truman
Mills, J. L. ..... Winnebago
Parsons, R. L. ..... Monterey
Rowe, W. H. ..... Fairmont
§Russ, H. H. ..... Blue Earth
§Snyder, C. D. ..... Kiester
Skragg, Harry ..... Elmore
§Thayer, E. A. ..... Fairmont
Vaughan, V. M. ..... Truman
§Virnig, M. P. ..... Wells
§Virnig, R. P. ..... Wells
Wenzel, R. E. ..... Blue Earth
Wilson, C. E. ..... Blue Earth
§Zemke, E. E. ..... Fairmont

CAMP RELEASE MEDICAL SOCIETY

Chippewa, Lac Qui Parle and Yellow Medicine Counties
Regular meetings monthly
Annual meeting, December
Number of Members: 30

President
Lundell, C. L. ..... Granite Falls

Secretary
§Schmidt, P. G., Jr. ..... Granite Falls

Andrejek, A. R. ..... Madison
§Bergh, L. N. ..... Montevideo
Boody, G. J., Jr. ..... Dawson
Burns, F. M. ..... Milan
Burns, M. A. ..... Milan
Guilbert, G. D. ..... Wood, Wis.
Hartfiel, H. A. ..... Montevideo
§Hauge, M. I. ..... Clarkfield
Holmberg, L. J. ..... Canby
Hudec, E. R. ..... Echo
§Johnson, V. M. ..... Dawson
†Jordan, Kathleen ..... Granite Falls
Jordan, L. S. ..... Granite Falls
§Kath, R. H. ..... Wood Lake
Kaufman, W. C. ..... Appleton
Kraemer, George ..... Canby
Larson, Paul G. ..... Ohio
Lee, W. N. ..... Madison
Lima, Ludvig ..... Montevideo
Lima, L. R., Jr. ..... Montevideo
Lundell, C. L. ..... Granite Falls
McGeary, George ..... Clarkfield
§Nelson, M. S. ..... Granite Falls
Owens, W. A. ..... Montevideo
Pertl, A. L. ..... Canby
§Roust, H. A. ..... Montevideo
§Schmidt, P. G., Jr. ..... Granite Falls
§Smith, L. G. ..... Montevideo
§Westby, Magnus ..... Madison
Westby, Nels ..... Madison

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 25

President
Oliver, James ..... Moorhead

Secretary
Hendrickson, R. R. ..... Lake Park

†Aborn, W. H. ..... Hawley
Bloemendaal, E. J. G. ..... Lake Park
Bottolfson, B. T. ..... Moorhead
Bourget, G. G. ..... Detroit Lakes
Carman, J. E. ..... Detroit Lakes
Duncan, J. W. ..... Moorhead
Ellington, A. R. ..... Detroit Lakes
Hagen, O. J. ..... Moorhead
Haight, G. G. ..... Audubon
Hendrickson, R. R. ..... Lake Park
Humphrey, E. W. ..... Moorhead
Ingebrightson, E. K. G. ..... Moorhead
Johnson, Olga H. ..... Moorhead
Larson, Arnold ..... Detroit Lakes
§Moberg, C. W. ..... Detroit Lakes
Moe, A. E. ..... Moorhead
§Oliver, James ..... Moorhead
Otto, H. C. ..... Frazee
Rutledge, L. H. ..... Detroit Lakes
Sizman, G. O. ..... Georgetown
Seitz, S. B. ..... Barnesville
Shaw, H. A. ..... Minneapolis
Simison, Carl ..... Barnesville
Thysell, F. A. ..... Moorhead
Thysell, V. D. ..... Hawley

DAKOTA COUNTY MEDICAL SOCIETY

Number of Members: 5

Burns, L. S. ..... So. St. Paul
Emonds, A. J. ..... Farmington
Emonds, J. S. ..... Farmington
Field, A. H. ..... Farmington
Sanford, J. A. ..... Farmington

EAST CENTRAL MINNESOTA MEDICAL SOCIETY

Anoka, Chisago, Isanti, Kanabec, Mille Lacs, Pine and Sherburne Counties

Regular meetings, February, April, June, August, October, December
Annual meeting, December

Number of Members: 38

President
Stratte, A. K. ..... Pine City

Secretary
Roehlke, A. B. ..... Elk River

§Albrecht, H. H. ..... Lindstrom
Arends, A. L. ..... Moose Lake
Aurick, A. M. ..... Oramel
§Blomberg, W. R. ..... Princeton
Bossert, C. S. ..... Mora
Brownstone, Manuel ..... Sandstone
§Bunker, B. W. ..... Anoka
Burns, H. A. ..... Anoka
Clothier, E. F. ..... Elk River
§Crabtree, J. C. ..... Princeton
†Dedolph, T. H. ..... Minneapolis
Dredge, H. P. ..... Sandstone
§Gully, R. J. ..... Cambridge
Halbin, J. E. ..... Rush City
§Hedenstrom, L. H. ..... Cambridge
Holmes, A. E. ..... Rush City
Hubin, E. G. ..... Sandstone
Johnson, A. F. ..... Isanti
Kapsner, A. T. ..... Princeton
§McManus, W. F. ..... Princeton
§Miller, E. W. ..... Anoka
§Nordman, W. F. ..... Mora
Nygren, W. T. ..... Braham
§O'Hanlon, J. A. ..... Lindstrom
Peterson, C. A. ..... Minneapolis
§Riegel, G. S. ..... Taylors Falls
§Roehlke, A. B. ..... Elk River
Sather, R. N. ..... Mora
Schlesselman, George ..... Anoka
§Sherman, H. T. ..... Cambridge
Spurzem, R. J. ..... Anoka
Stephan, E. L. ..... Hinckley
§Stratte, A. K. ..... Pine City
§Swensen, R. G. ..... North Branch
§Tesch, G. H. ..... Elk River
Trommold, Gladys ..... Anoka
Vik, Melvin ..... Onamia
Waller, J. D. ..... Pine City
§Whitney, R. A. ..... Cambridge

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December

Number of Members: 21

President
Prins, L. R. ..... Albert Lea

Secretary
Palmerton, E. S. ..... Albert Lea

§Barr, L. C. ..... Albert Lea
§‡Branham, D. S. ..... Albert Lea
§Butturff, C. R. ..... Freeborn
§Calhoun, F. W. ..... Albert Lea
§Demo, Robert A. ..... Albert Lea
Donovan, D. L. ..... Albert Lea
§Folken, F. G. ..... Albert Lea
Freligh, W. P. ..... Albert Lea
*Gamble, J. W. ..... Albert Lea
*Gamble, P. M. ..... Albert Lea
§Hansen, T. M. ..... Albert Lea
Kamp, B. A. ..... Albert Lea
Leopard, B. A. ..... Albert Lea
§Neel, H. B. ..... Albert Lea
Nelson, Clayton E. J. ..... Albert Lea
§Nesheim, M. O. ..... Emmons
Palmer, C. F. ..... Albert Lea
§Palmerton, E. S. ..... Albert Lea
§Person, J. P. ..... Albert Lea
Prins, L. R. ..... Albert Lea
§Schultz, J. A. ..... Albert Lea
§Swanson, R. R. ..... Albert Lea
§Whitson, S. A. ..... Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Regular meetings, none
Annual meeting, December

Number of Members: 26

President
Flom, M. G. ..... Zumbrota

Secretary
§Brusegard, J. F. ..... Red Wing

Aanes, A. M. ..... Red Wing
§Akins, W. M. ..... Red Wing
Anderson, S. H. ..... Red Wing
Bagby, G. W. ..... Cannon Falls
§Brusegard, J. F. ..... Red Wing
§Claydon, H. F. ..... Red Wing
§†Claydon, L. E. ..... Red Wing
Flom, M. G. ..... Zumbrota
§Graves, R. B. ..... Red Wing
§Hartnagel, G. F. ..... Red Wing
§Hedin, R. F. ..... Red Wing
Johnson, A. E. ..... Red Wing
†Jones, A. W. ..... Red Wing
§Juers, E. H. ..... Red Wing
§Kimmel, G. C. ..... Red Wing
§Liffrig, W. W. ..... Red Wing
Mack, J. J. ..... Little Rock, Ark.
Maertz, R. W. ..... Goodhue
§McGuigan, H. T. ..... Red Wing
Odessky, Louis ..... New York
Reitman, J. H. ..... Hastings
§Sherman, R. V. ..... Red Wing
†Smith, M. W. ..... Red Wing
§Steffens, L. A. ..... Red Wing
§Williams, M. R. ..... Cannon Falls
Youngstrom, C. S. ..... Ortonville

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday each month, October through May
Annual meeting, October

Number of Members: 762

President
Creighton, Ralph H. ..... Minneapolis

Secretary
Aling, Chas. A. ..... Minneapolis

Executive Secretary
Mrs. Flora H. Hancock ... Minneapolis

§Aagaard, G. N., Jr. ..... Minneapolis
§Abramson, Milton ..... Minneapolis
Adkins, C. D. ..... Minneapolis
Ahern, E. E. ..... Minneapolis
Alexander, H. A. ..... Minneapolis
Alger, E. W. ..... Minneapolis
§Aling, C. A. ..... Minneapolis
*§‡Aling, C. P. ..... Minneapolis
*†Allen, H. W. ..... Minneapolis
Altman, R. F. ..... Minneapolis
§Altnow, H. O. ..... Minneapolis
*§Anderson, A. G. ..... Minneapolis
§Andersen, S. C. ..... Minneapolis
§Anderson, D. D. ..... Minneapolis
§Anderson, E. D. ..... Minneapolis
§Anderson, E. R. ..... Minneapolis
§Anderson, F. J. ..... Minneapolis
§Anderson, J. K. ..... Minneapolis
§Anderson, K. W. ..... Minneapolis
Anderson, M. C. ..... Minneapolis
§Anderson, U. S. ..... Minneapolis
Anderson, W. T. ..... Minneapolis
Andreassen, E. C. ..... Minneapolis
Andresen, K. D. ..... Minneapolis
§Andrews, R. S. ..... Minneapolis
§Arey, S. L. ..... Minneapolis
§Arlander, C. E. ..... Minneapolis
§Arling, L. S. ..... Minneapolis
Arnold, Ann W. ..... Minneapolis
Arnold, D. C. ..... Minneapolis
§Arvidson, C. G. ..... Minneapolis
§Aune, Martin ..... Minneapolis
†Aurand, W. H. ..... Minneapolis
§Baird, J. W. ..... Minneapolis
§Baken, M. P. ..... Minneapolis
Baker, A. B. ..... Minneapolis
Baker, A. T. ..... Minneapolis
§Baker, E. L. ..... Minneapolis
†Baker, Looe ..... Minneapolis
§Balkin, S. G. ..... Minneapolis
Bank, H. E. ..... Portland, Oregon
†Barber, J. P. ..... Minneapolis
Barr, R. N. ..... Minneapolis
§Barron, Moses ..... Minneapolis
Bateman, Olive A. L. ..... Rochester
§†Baxter, S. H. ..... Minneapolis
§Bayard, H. F. ..... Minneapolis
§Beach, Northrop ..... Minneapolis
†Beard, A. H. ..... Minneapolis
†Beckman, W. G. ..... San Francisco, Calif.
§Bedford, E. W. ..... Minneapolis
§Beiswanger, R. H. ..... Minneapolis
†Bell, E. T. ..... Minneapolis
Bellville, T. P. ..... Minneapolis
Belzer, M. S. ..... Minneapolis
Benesh, L. A. ..... Minneapolis
*Benesh, N. G. ..... Minneapolis
§Benjamin, A. E. ..... Minneapolis
§Benjamin, E. G. ..... Minneapolis
§Benjamin, H. G. ..... Minneapolis
§Benn, F. G. ..... Minneapolis
Berger, A. G. ..... Minneapolis
§Bergh, G. S. ..... Minneapolis
Bergh, Solveig M. ..... Minneapolis
§Berkwitz, N. J. ..... Minneapolis
Berman, Reuben ..... Minneapolis
§Bessesen, A. N., Jr. ..... Minneapolis
§Bessesen, D. H. ..... Minneapolis
Bessesen, W. A. ..... Minneapolis
Bieter, R. N. ..... Minneapolis
Blake, Alan ..... Hopkins
§Blake, J. A. ..... Hopkins
§Blake, James ..... Hopkins
†Blake, P. S. ..... Minneapolis
§Bloedel, T. J. ..... Osseo
Blumenthal, J. S. ..... Minneapolis
Bockman, M. W. H. ..... Minneapolis
§Boehrer, J. J. ..... Minneapolis
§Boies, L. R. ..... Minneapolis
§†Booth, A. E. ..... Minneapolis
§Boreen, C. A. ..... Minneapolis
Borgeson, E. J. ..... Minneapolis
§Borman, C. N. ..... Minneapolis
†Borowicz, L. A. ..... Minneapolis
§Bowers, G. G. ..... Minneapolis
Boynton, Ruth E. ..... Minneapolis
§Bratrud, A. F. ..... Minneapolis
§Brekke, H. J. ..... Minneapolis
Brill, Alice K. ..... Minneapolis
Brooks, C. N. ..... Minneapolis
†Brown, E. D. ..... Paynesville
Brown, F. J. ..... Minneapolis
§Brown, J. R. ..... Minneapolis
†Brown, S. P. ..... Minneapolis
Brown, W. D. ..... Minneapolis
Brutsch, G. C. ..... Minneapolis
§Buchstein, H. F. ..... Minneapolis
§Buirge, Raymond ..... Minneapolis
Bulkley, Kenneth ..... Minneapolis
Burnham, W. H. ..... Minneapolis
Bushard, W. J. ..... Minneapolis
§Buzzelle, L. K. ..... Minneapolis
§Cable, M. L. ..... Minneapolis
§Cabot, C. M. ..... Minneapolis
§Cabot, V. S. ..... Minneapolis
Cady, L. H. ..... Minneapolis
Callerstrom, G. W. ..... Minneapolis
Cameron, Isabell L. ..... Minneapolis
Camp, W. E. ..... Minneapolis
Campbell, L. M. ..... Minneapolis
§Campbell, O. J. ..... Minneapolis
§Cardle, A. E. ..... Minneapolis

§Carey, J. B.....Minneapolis
§Carlson, Lawrence.....Minneapolis
§Carlson, L. T.....Minneapolis
§Caron, R. P.....Minneapolis
Carter, H. Gray.....Minneapolis
Caspers, C. G.....Minneapolis
§Cavanor, F. T.....Minneapolis
§Ceder, E. T.....Minneapolis
Challman, S. A.....Minneapolis
Chapman, C. B.....Minneapolis
Chesley, A. J.....Minneapolis
Chisholm, T. D.....Minneapolis
§Christenson, G. R.....Minneapolis
§Christianson, H. W.....Minneapolis
Clarke, E. K.....Minneapolis
§Clay, L. B.....Minneapolis
Cochrane, R. F.....Minneapolis
Cohen, B. A.....Minneapolis
§Cohen, S. S.....Oak Terrace
Colp, E. A.....Robbinsdale
Condit, W. H.....Minneapolis
Cooper, J. D.....Wayzata
§Corbett, J. F.....Minneapolis
Corniea, A. D.....Minneapolis
§Correa, D. H.....Minneapolis
Cowan, D. W.....Minneapolis
§Cranmer, R. R.....Minneapolis
†Cranston, R. W.....Minneapolis
§Creevy, C. D.....Minneapolis
§Creighton, R. H.....Minneapolis
§Culligan, L. C.....Minneapolis
§Culmer, C. U.....Minneapolis
Cumming, H. A.....Minneapolis
Cutts, George.....Minneapolis
Dady, E. E.....Minneapolis
§Dahl, E. O.....Minneapolis
§Dahl, J. A.....Minneapolis
§Daniel, D. H.....Minneapolis
§Dargay, C. P.....Minneapolis
§Davis, J. C.....Minneapolis
§Davis, W. I.....Mound
§del Plaine, C. W.....Minneapolis
Dennis, Clarence.....Minneapolis
§Devereaux, T. J.....Wayzata
§Diehl, H. S.....Minneapolis
Diessner, H. D.....Minneapolis
§Dorge, R. I.....Minneapolis
§Dornblaser, H. B.....Minneapolis
§Dorsey, G. C.....Minneapolis
Dowidat, R. W.....Minneapolis
Doxey, G. L.....Minneapolis
§Doyle, L. O.....Minneapolis
§Drake, C. R.....Minneapolis
§Drill, H. E.....Hopkins
§Duff, E. R.....Minneapolis
§Dukelow, D. A.....Minneapolis
†Dumas, A. G.....Minneapolis
§Dunlap, E. H.....Minneapolis
§Dunn, G. R.....Minneapolis
§Dupont, J. A.....Excelsior
§Duryea, W. M.....Minneapolis
†Dutton, C. E.....Minneapolis
§Dvorak, B. A.....Minneapolis
§Dwan, P. F.....Minneapolis
§Dworsky, S. D.....Minneapolis
Ebert, R. V.....Minneapolis
Eckles, Nylene.....Minneapolis
§Ehrenberg, C. J.....Minneapolis
§Ehrlich, S. P.....Minneapolis
§Eich, Matthew.....Minneapolis
Eisenstadt, D. H.....Minneapolis
Eisenstadt, W. S.....Minneapolis
§Eitel, G. D.....Minneapolis
§Ellison, D. E.....Minneapolis
§Engelhart, P. C.....Minneapolis
Englund, E. F.....Minneapolis
§Engstrand, O. J.....Minneapolis
§Erickson, C. O.....Minneapolis
§Erickson, R. F.....Minneapolis
§Ericson, R. M.....Minneapolis
§Evans, E. T.....Minneapolis
Evans, R. D.....Minneapolis
Fahr, G. E.....Minneapolis
§Fansler, W. A.....Minneapolis
†Farsht, I. J.....Minneapolis
†Farkas, J. V.....Minneapolis
Feeney, J. M.....Minneapolis
§Feinstein, J. Y.....Minneapolis
Fenger, E. P. K.....Oak Terrace
§*Fetterly, Warren.....Minneapolis
Fingerman, D. L.....Minneapolis
§Fink, L. W.....Minneapolis
§Fink, W. H.....Minneapolis
†Fitzgerald, D. F.....Minneapolis
†Fjelstad, C. A.....Minneapolis
§Fleeson, W. H.....Minneapolis
Fleming, D. S.....Minneapolis
§Foker, L. W.....Minneapolis
Folsom, L. B.....Minneapolis
§Ford, W. H.....Minneapolis
Foster, W. K.....Minneapolis
§Fowler, L. H.....Minneapolis
§Fox, J. R.....Minneapolis
Frane, D. B.....Minneapolis
Frank, W. L., Jr.....Minneapolis
Frear, Rosemary R.....Minneapolis
§Fredericks, G. M.....Minneapolis
§Fredlund, M. L.....Minneapolis
§French, L. O.....Minneapolis
§Fried, L. A.....Minneapolis
§Friedell, Aaron.....Minneapolis
§Frost, J. B.....Minneapolis
Frykman, H. M.....Minneapolis
Fuller, Alice H.....Minneapolis
§Funk, V. K.....Oak Terrace
Galligan, Margaret M. D.....Minneapolis
§Galloway, J. B.....Minneapolis
§Gammell, J. H.....Minneapolis
Garten, J. L.....Minneapolis
§Gibbs, R. W.....Minneapolis
§Giebenhaan, J. N.....Minneapolis
§Giere, J. C.....Minneapolis
§Giere, R. W.....Minneapolis
†Giessler, P. W.....Minneapolis
Gilbert, M. G.....Minneapolis
Gingold, B. A.....Minneapolis
§Girvin, R. B.....Minneapolis
§Goldberg, I. M.....Minneapolis
§Goldman, T. I.....Minneapolis
Goldner, M. Z.....Minneapolis
§Good, H. D.....Minneapolis
Gordon, P. E.....Minneapolis
§Gratzek, F. R.....Minneapolis
§Grave, Floyd.....Minneapolis
Gray, R. C.....Minneapolis
*Green, R. G.....Minneapolis
Grimes, Marian.....Minneapolis
§Gronvall, P. R.....Minneapolis
§Groskloss, H. H.....Minneapolis
§Gushurst, E. G.....Minneapolis
§Gustason, H. T.....Minneapolis
Haberer, Helen R.....Minneapolis
Hagen, P. S.....Minneapolis
§Hagen, W. S.....Minneapolis
†Haggard, G. D.....Minneapolis
§Hall, H. B.....Minneapolis
Hall, W. H.....Minneapolis
Hallberg, C. A.....Minneapolis
§Hamlin, G. B.....Minneapolis
§†Hammerstad, L. M.....Minneapolis
Hammond, A. J.....Minneapolis
§Hannah, H. B.....Minneapolis
§Hansen, C. O.....Minneapolis
§Hansen, E. W.....Minneapolis
Hansen, Olga S.....Minneapolis
§Hanson, H. J.....Minneapolis
Hanson, H. V.....Minneapolis
§Hanson, M. B.....Minneapolis
§Hanson, W. A.....Minneapolis
§Happe, L. J.....Minneapolis
Harris, Evelyn S.....Minneapolis
§Hart, V. L.....Minneapolis
§Hartig, Hermina.....Minneapolis
§†Hartzell, T. B.....Minneapolis
§Haserick, John R.....Minneapolis
§Hastings, D. R.....Minneapolis
§Hastings, D. W.....Minneapolis
§Hauge, E. T.....Minneapolis
Haugen, J. A.....Minneapolis
§Haven, W. K.....Minneapolis
§Hawkinson, R. P.....Minneapolis
§Hayes, J. M.....Minneapolis
§‡Hays, A. T.....Minneapolis
§Head, D. P.....Minneapolis
†§Head, G. D.....Minneapolis
†Hedbeck, A. E.....Minneapolis
§Heim, R. R.....Minneapolis
†Hendrickson, J. F.....Minneapolis
§Henrikson, E. C.....Minneapolis
†Henry, C. E.....Kirksville, Mo.
Henry, M. O.....Minneapolis
Herbert, W. L.....Minneapolis
Hertzog, A. J.....Minneapolis
Hesdorffer, M. B.....Minneapolis
§Higgins, J. H.....Minneapolis
Hill, E. M.....Minneapolis
§Hillis, S. J.....Minneapolis
Hinckley, R. G.....Minneapolis
§Hirshfield, F. R.....Minneapolis
Hitchcock, C. R.....Minneapolis
†Hoaglund, A. W.....Santa Monica, Calif.
§Hodge, S. V.....Minneapolis
†Hoffbauer, F. W.....Minneapolis
§Hoffert, H. E.....Minneapolis
§Hoffman, R. A.....Minneapolis
§Hoffman, W. L.....Minneapolis
§Holmberg, C. J.....Minneapolis
Holzapfel, F. C.....Minneapolis
§Horns, R. C.....Minneapolis
Hovland, M. L.....Minneapolis
§Howard, S. F.....Minneapolis
Hudson, G. E.....Minneapolis
§Huenekens, E. J.....Minneapolis
§Hultkrans, J. C.....Minneapolis
Hultkrans, R. E.....Minneapolis
†Hurd, Annah.....Minneapolis
§Hutchinson, C. J.....Minneapolis
Hutchinson, D. W.....Oak Terrace
§Hymes, Charles.....Minneapolis
Hynes, J. E.....Minneapolis
Irvine, H. G.....Minneapolis
§Iverson, R. M.....Minneapolis
James, E. M.....Minneapolis
§Jensen, Harry.....Minneapolis
§†Jensen, M. J.....Minneapolis
Jensen, N. K.....Minneapolis
Jensen, R. A.....Minneapolis
†Jerome, Bourne.....Minneapolis
§Johnson, A. B.....Minneapolis
Johnson, A. E.....Minneapolis
Johnson, Evelyn V.....Minneapolis
§Johnson, E. W.....Minneapolis
§Johnson, H. A.....Minneapolis
§Johnson, J. A.....Minneapolis
†Johnson, J. W.....Minneapolis
§Johnson, Julius.....Minneapolis
§Johnson, M. R.....Minneapolis
†Johnson, N. A.....Santa Monica, Calif.
Johnson, Norman.....Minneapolis
Johnson, N. T.....Minneapolis
Johnson, R. A.....Minneapolis
‡Johnson, Raymond A.....Minneapolis
§Johnson, R. E.....Minneapolis
Johnson, R. G.....Minneapolis
Johnson, Y. T.....Minneapolis
Jones, H. W., Jr.....Minneapolis
§Jones, W. R.....Minneapolis
Josewich, Alexander.....Minneapolis
§Judd, W. H.....Washington, D. C.
§Jurdy, M. J.....Minneapolis
Kabler, P. W.....Minneapolis
Kalin, O. T.....Minneapolis
§Kaplan, J. J.....Minneapolis
§Karleen, C. I.....Minneapolis
Karlstrom, A. E.....Minneapolis
§Kaufman, H. J.....Minneapolis
§Kelby, G. M.....Minneapolis
Kelly, J. P.....Minneapolis
§Kennedy, C. C.....Minneapolis
†Kennedy, Jane F.....Minneapolis
§Kerkhof, A. C.....Minneapolis
Kertesz, G.....Minneapolis
†King, E. A.....Minneapolis
King, F. W.....Oak Terrace
§Kinsella, T. J.....Minneapolis
§Kistler, A. J.....Minneapolis
*§Kistler, C. M.....Minneapolis
§Knapp, M. E.....Minneapolis
Knight, R. R.....Minneapolis
§Knight, R. T.....Minneapolis
§Koepcke, G. M.....Minneapolis
Koller, H. M.....Minneapolis
Koller, L. R.....Minneapolis
Korchik, J. P.....Minneapolis
Kottke, F. J.....Minneapolis
§Koucky, R. W.....Minneapolis
Kremen, A. J.....Minneapolis
§Kremen, I. C.....Minneapolis
Kucera, F. J.....Hopkins
§Kucera, W. J.....Minneapolis
Lagaard, S. M.....Minneapolis
Lajoie, J. M.....Minneapolis
§Lang, L. A.....Minneapolis
§Lapierre, A. P.....Minneapolis
§Lapierre, J. T.....Minneapolis
Larsen, F. W.....Minneapolis
§Larson, C. M.....Minneapolis
Larson, E. A.....Minneapolis
§Larson, Lawrence M.....Minneapolis
§Larson, L. M.....Oak Terrace
§Larson, P. N.....Minneapolis
Larson, R. H.....Anoka
§La Vake, R. T.....Minneapolis
§Law, S. G.....Minneapolis
§Laymon, C. W.....Minneapolis
†Leavitt, H. H.....Minneapolis
Lebowske, J. A.....Minneapolis
Lee, H. M.....Minneapolis
§Leland, H. R.....Minneapolis
§Lenz, O. A.....Minneapolis
§Leonard, L. J.....Minneapolis
§Leonard, Sam.....Minneapolis
§Lerner, A. Ross.....Minneapolis
Lillehei, E. J.....Robbinsdale
‡Lind, C. J. Jr.,.....Minneapolis
Lind, C. J.....Minneapolis
Lindberg, A. C.....Minneapolis
§Lindberg, V. L.....Minneapolis
§Lindbloom, A. E.....Minneapolis
§Lindgren, R. C.....Minneapolis
§Lindquist, R. H.....Minneapolis
§Linner, H. P.....Minneapolis
Linner, J. H.....Minneapolis
Lippman, E. S.....Minneapolis
§Lipschultz, Oscar.....Minneapolis
Lister, K. E.....Minneapolis
§Litchfield, J. T.....Minneapolis
Litman, A. B.....Minneapolis
§†Litzenberg, J. C.....Minneapolis
Llewellyn, M. B.....Minneapolis
§Lofsness, S. V.....Minneapolis
§Logefeil, R. C.....Minneapolis
§Loomis, E. A.....Minneapolis

Lovett, Beatrice R.....Oak Terrace
Lowry, Elizabeth C.....Minneapolis
Lowry, Thomas.....Minneapolis
§Lufkin, N. H.....Minneapolis
Lundberg, Ruth I.....Minneapolis
Lundblad, R. A.....Minneapolis
Lundblad, S. W.....Minneapolis
§Lundgren, A. C.....Minneapolis
§Lundquist, E. F.....Minneapolis
§Lynch, M. J.....Minneapolis
Lysne, Henry .....Minneapolis
§Lysne, Myron.....Minneapolis

†MacDonald, A. E.....Minneapolis
§MacDonald, D. A.....Minneapolis
§Mach, F. B.....Minneapolis
§MacKinnon, D. C.....Minneapolis
§MacMillan, D. G.....Minneapolis
Macnie, J. S.....Minneapolis
§Maeder, E. C.....Minneapolis
§Maland, C. O.....Minneapolis
§Mariette, E. S.....Oak Terrace
§Mark, D. B.....Minneapolis
§Marking, G. H.....Minneapolis
Martinson, C. J.....Wayzata
†Martinson, E. J.....Wayzata
†Matchan, G. R.....Minneapolis
§Mattill, P. M.....Oak Terrace
§Mattson, Hamlin.....Minneapolis
§Maxeiner, S. R.....Minneapolis
§†McCaffrey, F. J.....Minneapolis
McCann, E. J. .....Minneapolis
McCarthy, Donald.....Minneapolis
McCartney, J. S.....Minneapolis
‡McCrimmon, H. P.....Minneapolis
†McDaniel, Orianna.....Minneapolis
§McFarland, A. H.....Minneapolis
§McGandy, R. F.....Minneapolis
§McGeary, G. E.....Minneapolis
§McInerny, M. W.....Minneapolis
McKelvey, J. L.....Minneapolis
§McKenzie, C. H.....Minneapolis
§McKinlay, C. A.....Minneapolis
†McKinley, J. C.....Minneapolis
§McKinney, F. S.....Minneapolis
McMurtrie, W. B.....Minneapolis
§McPheeters, H. O.....Minneapolis
†McQuarrie, Irvine.....Minneapolis
Meller, R. L.....Minneapolis
§Merkert, C. E.....Minneapolis
§Merkert, G. L.....Minneapolis
†Merrick, Charlotte T.....Minneapolis
†Merrill, Elizabeth.....Minneapolis
§Meyer, A. J.....Minneapolis
§Meyer, E. L.....Minneapolis
Michael, J. C.....Minneapolis
Michel, H. H.....Minneapolis
§Michelson, H. E.....Minneapolis
†Mickelsen, Emma F.....Minneapolis
§Miller, Harold E.....Minneapolis
Miller, Hugo E.....Minneapolis
§Miller, J. C.....Minneapolis
§Milton, J. S.....Minneapolis
§Minsky, A. A.....Minneapolis
§Mitchell, B. D.....Minneapolis
Mitchell, E. C.....Mound
Mitchell, M. E.....Minneapolis
§Mitchell, M. T.....Minneapolis
Mixer, Harry W. .....Minneapolis
§Moe, J. H.....Minneapolis
§Moehn, J. T.....Minneapolis
§Moen, J. K.....Minneapolis
†Monahan, E. S. .....Minneapolis
§Monson, E. M.....Minneapolis
§Moos, D. J.....Minneapolis
Moren, Edward.....Minneapolis
§Mork, A. H. .....Anoka
§Mork, F. E. .....Anoka
Morrison, A. W.....Minneapolis
Morrison, Charlotte J.....Minneapolis
§Morse, R. W.....Minneapolis
§Murphy, E. P.....Minneapolis
§Murphy, I. J.....Minneapolis
†Musty, N. J.....Minneapolis
§Myers, J. A.....Minneapolis

§Naslund, A. W.....Minneapolis
§Neal, J. M.....Minneapolis
Neary, R. P.....Minneapolis
§Nelson, E. N.....Minneapolis
†Nelson, H. S.....Los Angeles, Calif.
§Nelson, M. C.....Minneapolis
§Nelson, N. Harvey.....Minneapolis
§Nelson, O. L. N.....Minneapolis
§Nelson, W. I. .....Minneapolis
§Nesbitt, Samuel.....Minneapolis
Nesset, L. B.....Marshall
Noonan, W. J.....Minneapolis
§Nord, Robert E.....Minneapolis
Noran, A. S. N. .....Minneapolis
§Noran, Harold H.....Minneapolis
§Nordin, G. T.....Minneapolis
§Nordland, Martin.....Minneapolis
§†Noth, H. W.....Minneapolis
§Nydahl, M. J.....Minneapolis

§Nylander, E. G.....Minneapolis
Nystrom, Ruth G.....Minneapolis
§Oberg, C. M.....Minneapolis
*†O'Brien, W. A. .....Minneapolis
O'Donnell, J. E.....Minneapolis
§Olsen, E. G.....Minneapolis
§Olson, A. C.....Minneapolis
Olson, J. W.....Minneapolis
†Olson, O. A.....Minneapolis
*†§Olson, R. G. .....Minneapolis
§Oppen, E. G.....Minneapolis
†Owre, Oscar .....Minneapolis
Palen, B. J.....Minneapolis
§Peppard, T. A.....Minneapolis
Perlman, E. C.....Minneapolis
§†Petersen, J. R.....Minneapolis
Peterson, H. W.....Minneapolis
§Peterson, J. J.....Minneapolis
Peterson, N. P.....Minneapolis
Peterson, O. H.....Minneapolis
§Peterson, P. E.....Minneapolis
§Peterson, W. C.....Minneapolis
Peterson, W. H. .....Minneapolis
§Petit, J. V.....Minneapolis
§Petit, L. J.....Minneapolis
Pewters, J. T.....Minneapolis
Peyton, W. T.....Minneapolis
§Pfunder, M. C.....Minneapolis
§Phelps, K. A.....Minneapolis
Plass, H. F. R.....Minneapolis
§Platou, E. S.....Minneapolis
§Pleissner, K. W.....St. Louis Park
§Plimpton, N. C.....Minneapolis
§Pohl, J. F.....Minneapolis
§Pollard, D. W.....Minneapolis
§Pollock, D. K.....Minneapolis
§Polzak, J. A.....Minneapolis
Poppe, F. H.....Minneapolis
§Potter, R. B.....Minneapolis
Pratt, F. J., Jr. .....Minneapolis
Pratt, F. J., Sr. .....Minneapolis
§Preine, I. A.....Minneapolis
Preston, P. J.....Minneapolis
Priest, R. E.....Minneapolis
§†Prim, J. A.....Minneapolis
Proffitt, W. E.....Minneapolis
§Proshek, C. E.....Minneapolis

§Quello, R. O. B.,.....Minneapolis
§Quist, H. W.....Minneapolis
Quist, H. W., Jr. .....Minneapolis

§Ransom, H. R.....Osseo
Reader, D. R.....Minneapolis
§Regan, J. J.....Minneapolis
§Regnier, E. A.....Minneapolis
Reid, L. M.....Excelsior
§Reif, H. A.....Minneapolis
§Reiley, R. E.....Minneapolis
§Reynolds, J. S.....Minneapolis
§Rice, C. O.....Minneapolis
§Richdorf, L. F.....Minneapolis
§Rieke, W. W.....Wayzata
Rigler, L. G.....Minneapolis
Riordan, Elsie M.....Minneapolis
§Risch, R. E.....Minneapolis
Rizer, D. K.....Minneapolis
Rizer, R. I.....Minneapolis
§Roan, O. M.....Minneapolis
Robb, E. F.....Minneapolis
§Robbins, O. F.....Minneapolis
Roberts, L. J.....Minneapolis
Roberts, S. W.....Minneapolis
§Roberts, W. B.....Minneapolis
*Robitshek, E. C.....Minneapolis
§Rodda, F. C.....Minneapolis
§Rodgers, C. L.....Minneapolis
§Rodgers, R. S.....Minneapolis
Rosendahl, F. G. .....Minneapolis
§Rosenfield, A. B.....Minneapolis
§Rosenwald, R. M.....Minneapolis
Roskilly, G. C. P.....Minneapolis
§Ross, A. J.....Minneapolis
§Rucker, W. H.....Minneapolis
Rud, N. E.....Minneapolis
Rudell, G. L.....Minneapolis
§Russeth, A. N.....Minneapolis
§Rusten, E. M.....Minneapolis
Ryding, V. T.....Howard Lake

§Sadler, W. P.....Minneapolis
St. Cyr, K. I.....Robbinsdale
§Saliterman, B. I.....Minneapolis
Samuelson, Samuel.....Minneapolis
§Sandt, K. E.....Minneapolis
§Sawatzky, W. A.....Minneapolis
§Schaaf, F. H. K.....Minneapolis
§Schaefer, W. G.....Minneapolis
†Scheldrup, N. H.....Minneapolis
§Scherer, L. R.....Minneapolis
Schiele, B. C.....Minneapolis
§Schmidt, G. F.....Minneapolis
*†Schmitt, A. F. .....Minneapolis
†Schmitt, S. C.....Los Angeles, Calif.
†Schneider, J. P.....Minneapolis
Schneider, R. A. .....Minneapolis
†Schneidman, N. R.....Minneapolis

Schottler, M. E.....Minneapolis
§Schultz, J. H. .....Minneapolis
§Schultz, P. J. .....Minneapolis
†Schussler, O. F.....Minneapolis
§Schwartz, V. J.....Minneapolis
†Schwyzer, Gustav.....Minneapolis
†Scott, F. H.....Minneapolis
§Scott, H. G.....Minneapolis
§Seaberg, J. A.....Minneapolis
§†Seashore, Gilbert.....Minneapolis
Seham, Max.....Minneapolis
§Seifert, M. H.....Excelsior
§Seljeskog, S. R. .....Minneapolis
§Shandorf, J. F.....Minneapolis
Shaperman, Eva P.....Minneapolis
§Shapiro, M. J.....Minneapolis
Sharp, D. V.....Minneapolis
§Shea, A. W.....Minneapolis
Sher, Louis .....Minneapolis
§Siegmann, W. C.....Minneapolis
Silver, J. D.....Minneapolis
§†Simons, J. H.....Minneapolis
Simonson, D. B.....Minneapolis
§Simpson, E. D.....Minneapolis
Sinykin, M. B.....Minneapolis
Siperstein, D. M.....Minneapolis
†Sivertsen, Andrew.....Mound
§Sivertsen, Ivar.....Minneapolis
§Skjold, A. C.....Minneapolis
§Smisek, F. M. .....Minneapolis
Smith, Adam M.....Minneapolis
§Smith, Archie M.....Minneapolis
Smith, B. A., Jr.....Minneapolis
Smith, H. R.....Minneapolis
§Smith, N. M.....Minneapolis
Smith, N. R.....Minneapolis
Soderlind, R. T.....Minneapolis
§Solhaug, S. B.....Minneapolis
§Spano, J. P.....Minneapolis
§Spink, W. W.....Minneapolis
§Spratt, C. N.....Minneapolis
§Stahr, A. C.....Hopkins
§Stanford, C. E.....Minneapolis
State, David .....Minneapolis
Stein, K. E.....Lakeville
§Stelter, L. A.....Minneapolis
Stennes, J. L.....Minneapolis
Stenstrom, Annette T.....Minneapolis
§Stewart, R. I.....Minneapolis
§Stoesser, A. V.....Minneapolis
†Stomel, Joseph....Los Angeles, Calif.
†Strachauer, A. C.....Minneapolis
§Strom, G. W.....Minneapolis
Stromgren, D. T.....Minneapolis
§Stromme, W. B.....Minneapolis
Stone, S. P.....Minneapolis
§Strout, G. E.....Minneapolis
§Sturre, J. R.....Minneapolis
§Sukov, Marvin.....Minneapolis
Sullivan, R. M.....Minneapolis
Swanson, R. E.....Minneapolis
†Swanson, V. F. .....Minneapolis
§Sweetser, H. B., Jr.....Minneapolis
†Sweetser, H. B., Sr.....Minneapolis
§Sweetser, T. H.....Minneapolis
Sweitzer, S. E.....Minneapolis
§†Swendseen, C. G.....Minneapolis
§Tangen, G. M.....Minneapolis
Taylor, J. H.....Minneapolis
§Tenner, R. J.....Minneapolis
§Thomas, G. E.....Minneapolis
†Thomas, G. H.....Minneapolis
§Thompson, W. H.....Minneapolis
§Thysell, D. M.....Minneapolis
§†Tingdale, A. C.....Minneapolis
Tinkham, R. G. .....Minneapolis
Titrud, L. A.....Minneapolis
§Tobin, J. D.....Minneapolis
Todd, Romona L.....Minneapolis
§Trach, Benedict.....Minneapolis
§Trow, J. E.....Minneapolis
†Trow, W. H.....Minneapolis
Troxil, Elizabeth B.....Minneapolis
Trueman, H. S.....Minneapolis
Tucker, W. B. .....Minneapolis
§Tudor, R. B.....Minneapolis
§Tunstead, H. J.....Minneapolis
§†Turnacliff, D. D. .....Minneapolis

§Ude, W. H.....Minneapolis
§Ulrich, H. L.....Minneapolis
§Undine, C. A.....Minneapolis

Vik, A. E.....Minneapolis

§Wahlquist, H. F.....Minneapolis
§Walch, A. E.....Minneapolis
§Waldron, C. W.....Minneapolis
Walker, S. A. .....Minneapolis
§Wall, C. R.....Minneapolis
§Walsh, F. M .....Minneapolis
Walsh, W. T.....Minneapolis
Wangensteen, O. H.....Minneapolis
Ward, P. A.....Minneapolis
§Watson, C. G.....Minneapolis
§Watson, C. J.....Minneapolis
Weaver, M. M.....Minneapolis

Webb, E. A.....Minneapolis
Webb, R. C.....Minneapolis
Werner, George.....Minneapolis
Werner, R. F.....Minneapolis
West, Catharine C.....Minneapolis
Westphal, K. F.....Minneapolis
Wethall, A. G.....Minneapolis
Wetherby, Macnider.....Minneapolis
Weum, T. W.....Minneapolis
White, A. A.....Minneapolis
White, S. M.....Minneapolis
White, W. D.....Minneapolis
Whitesell, L. A.....Minneapolis
§Widen, W. F.....Minneapolis
Wilcox, A. E.....Minneapolis
§†Willcutt, C. E.....Phoenix, Ariz.
‡Wildebush, F. F.....Minneapolis
§Wilder, K. W.....Minneapolis
§Wilder, R. L.....Minneapolis
§Wilder, R. M., Jr.....Minneapolis
§Wilken, P. A.....Minneapolis
†Williams, Robert.....Carthage, Ill.
Winther, Nora M. C.....Minneapolis
Wipperman, F. F.....Minneapolis
§Witham, C. A.....Minneapolis
Wittich, F. W.....Minneapolis
Wolf, A. H.....Minneapolis
§Wohlrabe, A. A.....Minneapolis
*†Wright, C. D.....Minneapolis
§†Wright, S. G.....Minneapolis
Wright, W. S.....Minneapolis
Wyatt, O. S.....Minneapolis
Wynne, H. M. N.....Minneapolis
§Ylvisaker, R. S.....Minneapolis
§Yoerg, O. W.....Minneapolis
Zaworski, Leo A.....Minneapolis
Zierold, A. A.....Minneapolis
§Zinter, F. A.....Minneapolis
Ziskin, Thomas.....Minneapolis

KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday of month
Annual meeting, November
Number of Members: 42

President
Gilman, Lloyd.....Willmar

Secretary
Wilmot, H. E.....Litchfield

Anderson, R. E.....Willmar
Arnson, J. M.....Benson
Bosland, H. G.....Willmar
Branton, A. F. Chattanooga, Tennessee
Branton, B. J.....Willmar
Daignault, Oscar.....Benson
Danielson, K. A.....Litchfield
Danielson, Lennox.....Litchfield
Dille, D. E.....Litchfield
§Doswell, W. J.....Kerkhoven
Eberley, T. S.....Benson
Fisher, J. M.....Willmar
Frederickson, Alice C.....Willmar
Frederickson, G. U. Y.....Willmar
Frisch, F. P.....Willmar
§Frost, E. H.....Willmar
Giere, S. W.....Benson
Gilman, L. C.....Willmar
Griffin, R. P.....Benson
Hodapp, R. J.....Willmar
§Jacobs, D. L.....Willmar
§Jacobs, J. C.....Willmar
Johnson, Hans.....Kerkhoven
Kaufman, E. J.....Appleton
Lindley, S. B.....Willmar
Mattson, Albert D.....Madison
Michels, R. P.....Willmar
O'Connor, D. C.....Eden Valley
Penhall, F. W.....Willmar
Peterson, Willard E.....Willmar
Porter, O. M.....Willmar
Proeschel, R. K.....Willmar
Ripple, R. J.....New London
Rygh, Harold N.....Atwater
†Scofield, C. L.....Benson
Solhaug, S. G., Jr.,.....Appleton
Sellers, G. K.....Dassel
Solsem, F. N.....Ah-Gwah-Ching
Telford, V. J.....Litchfield
Tyler, S. H.....Raymond
Wilmot, C. A.....Litchfield
Wilmot, H. E.....Litchfield

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday of month
Annual meeting, last Tuesday in October
Number of Members: 26

President
Thompson, C. O.....Hendricks

Secretary
Workman, W. G.....Tracy

Akester, Ward.....Fergus Falls
Eckdale, J. E.....Marshall
Ferguson, W. C.....Walnut Grove
§Ford, B. C.....Marshall
Frank, J. E.....Marshall
Friedell, George.....Ivanhoe
Gray, F. D.....Marshall
Helferty, J. K.....Minneapolis
§Hermanson, P. E.....Hendricks
§Hoidale, A. D.....Tracy
Johnson, P. C.....Tyler
Kreuzer, T. C.....Marshall
Monson, L. J.....Canby
Murphy, J. E.....Marshall
Purves, G. H.....Hendricks
Remsberg, R. R.....Tracy
†Robertson, J. B.....Minneapolis
†Sanderson, E. T.....Alexandria
Sether, A. F.....Ruthton
Smith, L. A.....Balaton
Thompson, C. O.....Hendricks
Vadheim, A. L.....Tyler
§Valentine, W. H.....Tracy
Wolstan, S. D.....Minneota
Workman, W. G.....Tracy
Yaeger, W. W.....Marshall

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, second or third Wednesday of month
Annual meeting, January
Number of Members: 20

President
Gridley, John W.....Glencoe

Secretary
Brink, Donald.....Hutchinson

Anderson, C. A.....Winsted
Brink, D. M.....Hutchinson
Clement, J. B.....Lester Prairie
Goss, H. C.....Glencoe
Goss, Martha D.....Glencoe
Gridley, J. W.....Glencoe
Holm, H. H.....Glencoe
Jensen, A. M.....Brownton
Kallestad, L. L.....Hutchinson
§Klima, W. W.....Stewart
Lippmann, E. W.....Hutchinson
McMahon, M. J.....Green Isle
Neumaier, Arthur.....Glencoe
Peterson, K. H.....Hutchinson
Sahr, W. G.....Hutchinson
Scholpp, O. W.....Hutchinson
Selmo, J. D.....Norwood
§Sheppard, C. G.....Hutchinson
Truesdale, C. W.....Glencoe
Trutna, T. J.....Silver Lake

MOWER COUNTY MEDICAL SOCIETY

Regular meeting, last Thursday of each month
Annual meeting, December
Number of Members: 26

President
Wright, R. R.....Austin

Secretary
Rosenthal, F. H.....Austin

§Allen, H. B.....Austin
§Anderson, D. P., Jr.....Austin
§Barber, Tracy E.....Austin
§Cronwell, B. J.....Austin
Fisch, H. M.....Austin
§Flanagan, L. G.....Austin
§Grise, W. B.....Austin
§Havens, J. G. W.....Austin
Hegge, O. H.....Austin
§Hegge, R. S.....Austin
Henslin, A. E.....Le Roy
Henslin, M. E.....Cresco, Iowa
§Hertel, G. E.....Austin
§Leck, P. C.....Austin
§Lommen, P. A.....Austin
§McKenna, J. K.....Austin
Melzer, G. R.....Lyle
Morse, M. P.....Le Roy
§Robertson, P. A.....Austin
§Rosenthal, F. H.....Austin
Schneider, P. J.....Adams
§Schottler, G. J.....Dexter
§Sheedy, C. L.....Austin
Thomson, J. M.....Minneapolis
§Wilson, F. C.....Austin
§Wright, R. R.....Austin

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Regular meetings, every four months
Annual meeting, December
Number of Members: 26

President
Sjostrom, L. E.....St. Peter

Secretary
Sherman, A. G.....St. Peter

§†Aitkens, H. B.....LeCenter
§Covell, W. W.....St. Peter
§Curtis, R. A.....LeCenter
§Ericson, Swan.....Le Sueur
Freeman, G. H.....St. Peter
§Giroux, A. A.....North Mankato
§Grimes, B. P.....St. Peter
Henry, M. R.....St. Peter
§Hiniker, P. J.....Le Sueur
Holtan, Theodore.....Waterville
§Johnson, H. C.....North Mankato
Lanhoff, A. H.....St. Peter
§Larson, M. H.....Nicollet
§Lenander, M. E.....St. Peter
§Navratil, D. R.....Montgomery
§Nilson, H. J.....North Mankato
§Olmanson, E. G.....St. Peter
§Olson, D. C.....Gaylord
Rossen, R. X.....St. Peter
Sherman, A. G.....St. Peter
§Sjostrom, L. E.....St. Peter
§Sonnesyn, N. N.....Le Sueur
§Strathern, C. S.....St. Peter
§Strathern, F. P.....St. Peter
§Traxler, J. F.....Henderson
§Wohrabe, C. F.....North Mankato

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular meetings, first Wednesday every odd month
Annual meeting, November
Number of Members: 655

President
Berkman, John M. ..... Rochester

Secretary
Carryer, H. M. ..... Rochester

Ackerman, R. F. ..... Rochester
§Adams, R. C. ..... Rochester
§Adson, A. W. ..... Rochester
§Affeldt, D. E. ..... Kasson
Ahern, G. S. ..... Rochester
§Ahlfs, J. J. ..... Caledonia
§Aldrich, C. A. ..... Rochester
Allen, C. S. ..... Rochester
Allen, E. V. ..... Rochester
Allen, H. E. ..... Rochester
§Alvarez, W. C. ..... Rochester
Amberg, Samuel ..... Rochester
Anderson, C. D. ..... Rochester
Anderson, H. A. ..... Rochester
Anderson, James ..... Rochester
Anderson, M. E., Jr. ..... Rochester
§Anderson, M. J. ..... Rochester
§Anderson, M. W. ..... Rochester
Anderson, R. E. ..... Rochester
Arnesen, John F. ..... Rochester
Arling, P. A. ..... Rochester
Ashburn, F. S. ..... Rochester
Ashley, W. F. ..... Rochester
§Baggenstoss, A. H. ..... Rochester
§Bailey, A. A. ..... Rochester
Bailey, J. A. ..... Rochester
Bailey, J. H., Jr., ... Rochester
§Bair, H. L. ..... Rochester
§Baker, G. S. ..... Rochester
§Baker, H. R. ..... Hayfield
§Baker, R. L. ..... Hayfield
§Balfour, D. C. ..... Rochester
Balfour, D. C., Jr. ..... Rochester
Balfour, W. M. ..... Rochester
§Banner, E. A. ..... Rochester
§Bargen, J. A. ..... Rochester
Barger, J. D. ..... Rochester
§Barker, N. W. ..... Rochester
§Barnes, A. R. ..... Rochester
Barnes, Ben C. ..... Rochester
Barr, M. N. ..... Rochester
Bateman, J. G. ..... Rochester
Bauer, E. L. ..... Rochester
§Bayrd, E. D. ..... Rochester
Beahrs, O. H. ..... Rochester
‡Bearzy, H. J. ..... Rochester
Beck, N. R. ..... Salt Lake City, Utah
Beeler, J. W. ..... Rochester
Belote, G. B. ..... Caledonia
§Benedict, W. L. ..... Rochester
Bennett, J. K. ..... Rochester
§Bennett, W. A. ..... Rochester
Bentson, J. H. ..... Rochester
§Berkman, D. M. ..... Rochester
Berkman, D. S. ..... Rochester
§Berkman, J. M. ..... Rochester
§Bickel, W. H. ..... Rochester
§Bigelow, C. E. ..... Dodge Center
Bilka, P. J. ..... Rochester
Biorn, C. L. ..... Rochester
Black, B. M. ..... Rochester
§Blackburn, C. M. ..... Rochester
‡Blaisdell, J. S. ..... Rochester
Blunt, C. P., III, ... Rochester
§Boothby, W. M. ..... Rochester
Botha, Eleanor ..... Rochester
§Bowing, H. H. ..... Rochester
Boylan, R. N. ..... Rochester
§Braasch, W. F. ..... Rochester
Braastad, F. W. ..... Rochester
Brady, J. A. ..... Rochester
Brandes, R. W. ..... Rochester
‡Breslow, Lester ..... Rochester
Briggs, Natalie M. ..... Wenatchee, Wash.
Brilhart, K. B. ..... Rochester
§Broders, A. C. ..... Rochester
Brooks, L. M. ..... Rochester
Brooksby, W. A. ..... Rochester
§Brown, A. E. ..... Rochester
Brown, G. E. ..... Rochester
§Brown, H. A. ..... Rochester
Brown, H. S. ..... Rochester
§Brown, P. W. ..... Rochester
Browning, W. H. ..... Rochester
Brownson, B. C. ..... Rochester
§Brunsting, L. A. ..... Rochester
Butler, D. B. ..... Rochester
Bryan, A. L. ..... Rochester
§Buie, Louis A. ..... Rochester
§Burchell, H. B. ..... Rochester
Bush, R. P. ..... Rochester
§Butt, H. R. ..... Rochester
§Cain, J. C. ..... Rochester
Callaghan, Mary ..... Canada
Cameron, J. M. ..... Rochester
§Camp, J. D. ..... Rochester
§Campbell, D. C. ..... Rochester
Carlander, L. W., Jr., ... Rochester
Carmona, M. G. ..... Rochester
Carpenter, R. E. ..... Rochester
Carr, D. T. ..... Rochester
§Carryer, H. M. ..... Rochester
Carter, J. W., Jr. ..... Rochester
Chapman, C. E. ..... Rochester
Chapman, J. P., Jr. ..... Rochester
Childs, D. S., Jr., ... Rochester
§Christensen, N. A. ..... Rochester
Christoferson, L. A. ..... Rochester
§Clagett, O. T. ..... Rochester
Clark, F. H. ..... Rochester
§Clark, L. W. ..... Spring Valley
Clarkson, W. R. ..... Rochester
Clifton, T. A. ..... Chatfield
Cluxton, H. E., Jr., ... Rochester
Collett, R. W. ..... Rochester
§Comfort, M. W. ..... Rochester
Conley, F. W. ..... Rochester
Connery, D. B. ..... Rochester
*§†Connor, H. M. ..... Rochester
§Cook, E. N. ..... Rochester
§Cooper, Talbert ..... Rochester
§Corbin, K. B. ..... Rochester
Corcoran, C. E. ..... Rochester
§Counseller, V. S. ..... Rochester
§Coventry, M. B. ..... Rochester
§Craig, W. McK. ..... Rochester
*†Crewe, J. E. ..... Rochester
Cromer, H. E., Jr., ... Rochester
Cronkite, A. E. ..... Rochester
Crowley, D. F., Jr. ..... Rochester
Crowley, James H. ..... Rochester
‡Dahleen, H. C. ..... Rochester
§Dahlin, D. C. ..... Rochester
Daniels, B. T. ..... Rochester
Daugherty, G. W. ..... Rochester
Daut, R. V. ..... Rochester
‡Davies, L. T. ..... Rochester
§Davis, A. C. ..... Rochester
Davis, G. D. ..... Rochester
Davis, I. G. ..... Rushford
‡Davis, R. M. ..... Miami, Fla.
Day, Lois A. ..... Rochester
§Dearing, W. H., Jr. ..... Rochester
Dederick, G. F., Jr., ... Rochester
‡DeForest, R. E. ..... Detroit, Michigan
DeLamater, E. D. ..... Rochester
§Desjardins, A. U. ..... Rochester
Deterling, R. A. ..... New York
§Devine, K. D. ..... Rochester
Devney, J. W. ..... Rochester
DeVoe, R. W. ..... Rochester
DeWeerd, J. H. ..... Rochester
Diessner, G. R. ..... Rochester
§Dixon, C. F. ..... Rochester
§Dockerty, M. B. ..... Rochester
Doehring, P. C., Jr., ... Vallejo, Calif.
Dolder, F. C. ..... Eyota
Donoghue, F. E. ..... Rochester
Dornberger, G. R. ..... Rochester
Douglas, J. M. ..... Rochester
Douglass, B. E. ..... Rochester
†Drake, F. A. ..... Lanesboro
Drips, Della G. ..... Rochester
Drumheller, J. F. ..... Rochester
§Dry, T. J. ..... Rochester
Duggan, A. D. ..... Rochester
Dunn, J. H. ..... Rochester
§DuShane, J. W. ..... Rochester
Earnest, Franklin ..... Rochester
§Eaton, L. M. ..... Rochester
Eckstam, E. E. ..... Rochester
Edwards, J. E. ..... Rochester
§Elkins, E. C. ..... Rochester
Ellingson, E. A. ..... Rochester
Elliott, J. A., Jr., ... Rochester
Elliott, R. B. ..... Oskaloosa, Iowa
Ellis, F. H. ..... Rochester
Ellison, A. B. C. ..... Rochester
§Emmett, J. L. ..... Rochester
Erb, H. R. ..... Rochester
§Erich, J. B. ..... Rochester
§Erickson, D. J. ..... Rochester
§Estes, J. E. ..... Rochester
§Eusterman, G. B. ..... Rochester
†Evarts, A. B. ..... Rochester
§Faber, J. E. ..... Rochester
Faber, W. M. ..... Rochester
Farber, E. M. ..... Rochester
§Faulconer, A., Jr. ..... Rochester
Fawcett, R. M. ..... Rochester
§Feldman, F. M. ..... Rochester
Ferguson, W. J. ..... Rochester
§Ferris, D. O. ..... Rochester
‡Ferris, H. A., Jr. ..... Rochester
§Figi, F. A. ..... Rochester
Fisher, R. G. ..... Rochester
Fisher, R. L. ..... Rochester
Fitzgibbons, R. J. ..... Rochester
§Flashman, F. L. ..... Rochester
Flautt, J. R., Jr., ... Rochester
Ford, J. L. ..... Rochester
Forney, R. A. ..... Rochester
Foss, E. L. ..... Rochester
‡Freeman, J. G. ..... Rochester
§Fricke, R. E. ..... Rochester
Fricke, R. W. ..... Rochester
*Gaarde, F. W. ..... Rochester
§Gaarde, F. W., Jr. ..... Rochester
§†Gambill, C. M. ..... Rochester
§Gambill, E. E. ..... Rochester
Gastineau, C. F. ..... Rochester
Gates, E. M. ..... Rochester
Gay, J. R. ..... Rochester
Geraci, J. E. ..... Rochester
§Ghormley, R. K. ..... Rochester
Gibson, R. H. ..... Rochester
§Giffin, H. Z. ..... Rochester
Giffin, Mary E. ..... Rochester
Glenn, W. V. ..... Rochester
Gogela, L. J. ..... Rochester
Golden, P. B. ... Boston, Massachusetts
Gooch, J. O. ..... Rochester
§Good, C. A., Jr. ..... Rochester
Graham, F. M. ..... Rochester
Graham, R. J. ..... Rochester
Gramse, A. E. ..... Rochester
Gray, G. P. ..... Rochester
§Gray, H. K. ..... Rochester
Greene, L. F. ..... Rochester
Griffin, J. G. ..... Rochester
Griffith, E. R. ..... Rochester
§Grindlay, J. H. ..... Rochester
Groom, Dale ..... Rochester
Gross, J. B. ..... Rochester
Grotting, J. K. ..... Rochester
Guernsey, D. E. ..... Rochester
§Habein, H. C. ..... Rochester
§Hagedorn, A. B. ..... Rochester
Haines, R. D. ..... Rochester
§Haines, S. F. ..... Rochester
§Hall, B. E. ..... Rochester
§Hallberg, O. E. ..... Rochester
§Hallenbeck, D. F. ..... Rochester
§Hallenbeck, G. A. ..... Rochester
Hamilton, C. F. ..... Rochester
Hamm, R. S. ..... Rochester
Hanlon, D. G. ..... Rochester
Hanlon, G. H. ..... Rochester
§Hanson, N. O. ..... Rochester
§Hargraves, M. M. ..... Rochester
§Harrington, S. W. ..... Rochester
§Harris, L. E. ..... Rochester
Hart, G. M. ..... Rochester
§Hartman, H. R. ..... Rochester
Harvard, B. M. ..... Rochester
Harvey, George, Jr. ..... Rochester
Hasskarl, W. F., Jr. ..... Rochester
Hatcher, A. C. ..... Rochester
§Havens, F. Z. ..... Rochester
Hay, S. H. ..... Rochester
Hayles, A. B. ..... Rochester
Haynes, Allan ..... Rochester
Headley, N. E. ..... Rochester
§Heck, F. J. ..... Rochester
§Heersema, P. H. ..... Rochester
†Heilman, D. H. ..... Rochester
Heilman, F. R. ..... Rochester
Heinrich, W. A. ..... Rochester
†Helland, G. M. ..... Spring Grove
§Helland, J. W. ..... Spring Grove
§Helmholz, H. F. ..... Rochester
§Hempstead, B. E. ..... Rochester
§Hench, P. S. ..... Rochester
‡Henderson, E. D. ..... Rochester
§Henderson, J. W. ..... Rochester
Henderson, L. L. ..... Rochester
§Henderson, M. S. ..... Rochester
Henegar, G. C. ..... Rochester
Henkel, H. B. ..... Rochester
Herbst, R. F. ..... Wykoff
Hermann, H. W. ..... Caledonia
§Herrell, W. E. ..... Rochester
Hetherington, J. A. ..... Rochester
Hewitt, Edith S. ..... Rochester
†Hewitt, R. M. ..... Rochester
†Heyerdale, O. C. ..... Rochester
Heyerman, O. T. ..... Rochester
Hildebrand, C. H., Jr., ... Rochester
Hightower, N. C., Jr. ..... Rochester
§Hill, J. R. ..... Rochester
§Hines, E. A., Jr. ..... Rochester
§Hinshaw, H. C. ..... Rochester
§Hodgson, C. H. ..... Rochester
§Hodgson, J. R. ..... Rochester

Hogben, C. A. ..... Rochester
Hollenhorst, R. W. ..... Rochester
Holman, C. B. ..... Rochester
Holt, R. P. ..... Rochester
Hoon, J. R. ..... Rochester
Hoppes, E. E. ..... Rochester
Horning, E. D. ..... Rochester
Horton, B. T. ..... Rochester
Howell, L. P. ..... Rochester
Hunt, A. B. ..... Rochester
Hunt, V. W. ..... Rochester
Hurley, J. P. ..... Rochester
Irmisch, G. W. ..... Rochester
Ivins, J. C. ..... Rochester
Jackman, R. J. ..... Rochester
Jackson, A. E. ..... Rochester
Jackson, H. S. ..... Rochester
Janes, J. M. ..... Rochester
Jarrett, P. S. ..... Rochester
Jennings, D. T. ..... Rochester
Jensen, G. L. ..... Rochester
Johns, Sylvia ..... Rochester
Johnson, B. H., Jr. ..... Rochester
Johnson, C. C. ..... Rochester
Johnson, E. W. ..... Rochester
Johnson, H. A. ..... Rochester
Johnson, M. A. ..... Rochester
Johnson, R. B. ..... Lanesboro
Jondahl, W. H. ..... Rochester
Jones, R. H., Jr. ..... Rochester
Joyce, G. J. ..... Rochester
Judd, E. S., Jr. ..... Rochester

Kadish, E. J. ..... California
Keating, F. R., Jr. ..... Rochester
Keating, J. U. ..... Rochester
Keeley, J. K. ..... Rochester
Keffer, W. H. ..... Rochester
Keith, H. M. ..... Rochester
Keith, N. M. ..... Rochester
Kelsey, M. P. ..... Rochester
Kemper, C. M. ..... Rochester
Kennedy, R. L. J. ..... Rochester
Kennedy, T. J. ..... Rochester
§Kepler, E. J. ..... Rochester
Kernohan, J. W. ..... Rochester
Kierland, R. R. ..... Rochester
King, Nancy B. ..... Rochester
Kirby, J. L. ..... Rochester
§Kirklin, B. R. ..... Rochester
Kirklin, J. W. ..... Rochester
Kirkpatrick, N. R. ..... Rochester
Klontz, C. E., Jr. ..... Rochester
§Knisely, R. M. ..... Rochester
Knutson, J. R. B. ..... Rochester
§Knutson, L. A. ..... Spring Grove
§Koelsche, G. A. ..... Rochester
Kreilkamp, B. L. ..... Rochester
§Krusen, F. H. ..... Rochester
Kurzweg, F. T. ..... Plaquemine, La.
Kusske, B. M. ..... Caledonia
§Kvale, W. F. ..... Rochester

§Lake, C. F. ..... Rochester
§Lampert, E. G. ..... Rochester
Lamont, C. S. ..... Rochester
Landry, R. M. ..... Rochester
Lannin, J. C. ..... Mabel
Larrabee, W. F., Jr. ..... Rochester
§Leary, W. V. ..... Rochester
Leavitt, M. D. ..... Rochester
LeBlanc, L. J. ..... Rochester
Leden, U. M. ..... Rochester
§Leddy, E. T. ..... Rochester
Lee, J. B. ..... Rochester
Lee, M. J. ..... Rochester
Lemon, W. E. ..... Rochester
§Lemon, W. S. ..... Rochester
Levin, Louis ..... Rochester
§Lillie, H. I. ..... Rochester
Lillie, J. C. ..... Rochester
§Lipscomb, P. R. ..... Rochester
Lofgren, K. A. ..... Rochester
Logan, Arch, Jr. ..... Rochester
§Logan, A. H. ..... Rochester
§Logan, G. B. ..... Rochester
Lombardi, A. A. ..... Rochester
Long, C. M. ..... Rochester
Long, J. W. ..... Rochester
§Love, J. G. ..... Rochester
§Lovelady, S. B. ..... Rochester
Lovshin, L. L. ..... Rochester
Lowy, Alexander, Jr. ..... Rochester
Loyd, E. L. ..... Rochester
Ludden, T. E. ..... Rochester
Luellen, T. J. ..... Rochester
§Lundy, J. S. ..... Rochester
Lyman, R. W. ..... Rochester
Lynch, J. L. ..... Rochester

§MacCarty, C. S. ..... Rochester
§†MacCarty, W. C. ..... Rochester
Macdonald, I. D. ..... Rochester
§MacLean, A. R. ..... Rochester
‡MacMurtrie, W. J., Jr. ..... Bethesda, Md.
Macy, Dorothy ..... Rochester

§Magath, T. B. ..... Rochester
§†Mann, F. C. ..... Rochester
Marek, F. H. ..... Rochester
Margulies, Harold ..... Rochester
§Masson, D. M. ..... Rochester
§Masson, J. C. ..... Rochester
Mayfield, L. H. ..... Rochester
§Mayo, C. W. ..... Rochester
§Maytum, C. K. ..... Rochester
McAnally, A. K. ..... Rochester
§McBean, J. B. ..... Rochester
McClellan, J. T. ..... Rochester
McConahey, W. M., Jr. ..... Rochester
McCorkle, J. K. ..... Rochester
McCready, F. J. ..... Rochester
McCreight, W. G. ..... Rochester
§McDonald, J. R. ..... Rochester
McElin, T. W. ..... Rochester
McGuff, P. E. ..... Rochester
McKaig, C. B. ..... Pine Island
McLaughlin, B. H. ..... Rochester
McMahon, J. M. ..... Rochester
McMillan, J. T. ..... Rochester
McQuarrie, H. B. ..... Rochester
‡Meadows, J. A. ..... Rochester
Medwick, J. K. ..... Rochester
Merrill, J. G. ..... Rochester
§Merritt, W. A. ..... Rochester
Messler, J. D. ..... California
Meyer, A. C. ..... Rochester
Meyer, W. M. ..... Rochester
§Meyerding, H. W. ..... Rochester
Mezen, J. F. ..... Rochester
Millen, F. J. ..... Rochester
‡Miller, Sidney ..... Rochester
Mills, M. D. ..... Rochester
§Mills, S. D. ..... Rochester
§Moersch, F. P. ..... Rochester
§Moersch, H. J. ..... Rochester
Montgomery, G. E. ..... Rochester
§Montgomery, Hamilton ..... Rochester
Morgan, E. H. ..... Rochester
Morgan, J. L. ..... Rochester
§Morlock, C. G. ..... Rochester
Morris, C. R. ..... Rochester
Morris, D. S. ..... Rochester
Morrison, A. E., Jr. ..... Rochester
Morrow, J. R. ..... Rochester
Murphy, M. E. ..... Rochester
Murphy, M. H. ..... Rochester
‡Murray, R. A. ..... Rochester
Musgrove, J. E. ..... Rochester
Mussey, Mary E. ..... Rochester
§Mussey, R. D. ..... Rochester
Mussey, R. D., Jr. ..... Rochester
§Myers, T. T. ..... Rochester

Nacktwey, R. E. ..... Rochester
Nehring, J. P. ..... Preston
Neibling, H. A. ..... Rochester
Nelson, C. G. ..... Rochester
§New, G. B. ..... Rochester
§Nichols, D. R. ..... Rochester
‡Nickeson, R. W. ..... Rochester
Nix, J. T. ..... Rochester
Nixon, R. R. ..... Rochester
Nordland, M. A. ..... Rochester
Norley, Theodore ..... Rochester
§Norris, N. T. ..... Caledonia
Norval, M. A. ..... Rochester

§Odel, H. M. ..... Rochester
Olcott, E. D. ..... Rochester
§O'Leary, P. A. ..... Rochester
§Olsen, A. M. ..... Rochester
§Olson, E. A. ..... Pine Island
Olson, G. E. ..... West Concord
§Olson, S. W. ..... Rochester
O'Neal, Ruth ..... Rochester
Onsgard, L. K. ..... Houston
Osborn, J. E. ..... Rochester
Owen, C. A., Jr. ..... Rochester

Paalman, R. J. ..... Rochester
Painter, R. C. ..... Rochester
Palazzo, F. A. ..... Rochester
Parke, F. F. ..... Rochester
§Parker, H. L. ..... Rochester
§Parker, R. L. ..... Rochester
Parkhill, Edith M. ..... Rochester
Parkin, T. W. ..... Rochester
Parkinson, Dwight ..... Rochester
Paschall, Jack, Jr. ..... Rochester
Paulson, J. A. ..... Rochester
Pearson, C. C. ..... Rochester
Pease, Gertrude L. ..... Rochester
§Pemberton, J. deJ. ..... Rochester
§Pender, J. W. ..... Rochester
Perkins, R. F. ..... Rochester
Perry, E. L. ..... Rochester
§Peters, G. A. ..... Rochester
§Petersen, M. C. ..... Rochester
Peterson, J. R. ..... Rochester
Phillips, S. K. ..... Rochester
§Piper, M. C. ..... Rochester
§Plummer, W. A. ..... Rochester
Pollack, A. A. ..... Rochester

§Polley, H. F. ..... Rochester
§Pool, T. L. ..... Rochester
Poore, T. N. ..... Rochester
§Popp, W. C. ..... Rochester
Porter, C. B. ..... Rochester
Potter, R. T. ..... Rochester
§Powers, F. H. ..... Rochester
§Prangen, A. D. ..... Rochester
§Pratt, J. H. ..... Rochester
Pratt, W. C. ..... Rochester
§Prickman, L. E. ..... Rochester
Pridgen, J. E. ..... Rochester
§Priestley, J. T. ..... Rochester
Prough, W. A. ..... Rochester
§Pruitt, R. D. ..... Rochester
§Pugh, D. G. ..... Rochester
Putman, H. C., Jr. ..... Rochester

Ralston, D. E. ..... Rochester
Ramsey W. H. II ..... Rochester
§Randall, L. M. ..... Rochester
Rang, R. H. ..... Rochester
§Rasmussen, W. C. ..... Rochester
Raszkowski, H. J. ..... Rochester
ReMine, W. H., Jr. ..... Rochester
Remington, J. H. ..... Rochester
Reynolds, J. L. ..... Rochester
Rice, Roberta G. ..... Rochester
Ricks, H. C., Jr. ..... Rochester
Ridley, Roger W. ..... Rochester
Rinehart, Robert E. Wheeler, Oregon
§Risser, A. F. ..... Stewartville
§Rivers, A. B. ..... Rochester
Roberts, N. J. ..... Rochester
§Rogne, W. G. ..... Spring Grove
Rosenbaum, E. E. ..... Omaha, Nebraska
Routley, E. F. ..... Rochester
Rovelstad, R. A. ..... Rochester
§Rucker, C. W. ..... Rochester
Ruff, C. C. ..... Rochester
Rulison, E. T., Jr. ..... Rochester
Rydall, J. R. ..... Rochester
§Rynearson, E. H. ..... Rochester

Salassa, R. M. ..... Rochester
§Sanford, A. H. ..... Rochester
Sanford, R. A. ..... Rochester
§Sauer, W. G. ..... Rochester
Saylor, H. L. ..... Rochester
§Sayre, G. P. ..... Rochester
Scandalis, P. R. ..... Rochester
Scanlon, R. L. ..... Rochester
Schafer, L. A. ..... Rochester
§Scheifley, C. H. ..... Rochester
Schlotter, D. C. ..... Rochester
§Schmidt, H. W. ..... Rochester
‡Scholten, R. A. ..... Rochester
Seebach, Lydia M. ..... Rochester
Seiler, H. H. ..... Rochester
§Seldon, T. H. ..... Rochester
§Seybold, W. D. ..... Rochester
Shellito, J. G. ..... Rochester
Sheridan, Viola E. ..... Rochester
§Shick, R. M. ..... Rochester
Shonyo, E. S. ..... Rochester
Short, C. A., Jr. ..... Rochester
Shullenberger, C. C. ..... Rochester
§Simonton, K. M. ..... Rochester
Skaug, H. M. ..... Chatfield
‡Skillern, P. G., Jr. ..... Rochester
Skroch, E. E. ..... Rochester
Slaughter, O. L. ..... Rochester
Sloan, W. P., Jr. ..... Rochester
§Slocumb, C. H. ..... Rochester
Smith, D. E. ..... Rochester
§Smith, F. L. ..... Rochester
Smith, F. R. ..... Rochester
§Smith, H. L. ..... Rochester
§Smith, L. A. ..... Rochester
§Smith, N. D. ..... Rochester
Smith, O. O., Jr. ..... Rochester
§Snell, A. M. ..... Rochester
Snider, G. G. ..... Rochester
Spar, A. A. ..... Rochester
Spaulding, C. A. ..... Rochester
Spear, R. C. ..... Rochester
§Sprague, R. G. ..... Rochester
‡Spray, Paul ..... Rochester
Spencer, J. R. ..... Rochester
Stark, D. B. ..... Rochester
Stark, F. M. ..... Rochester
‡Starks, W. O. ..... Rochester
Starrs, R. P. ..... Rochester
Stauffer, M. H. ..... Rochester
Stevens, J. E., Jr. ..... Rochester
§Stickney, J. M. ..... Rochester
§Stilwell, G. G. ..... Rochester
Stokes, G. D. ..... Rochester
§Stroebel, C. F., Jr. ..... Rochester
Stuart, R. L. ..... Rochester
Sundberg, C. L. ..... Rochester
†Sutherland, C. G. ..... Rochester
Svien, H. J. ..... Rochester
Sweeney, A. R. ..... Rochester

Taylor, B. E. ..... Rochester
Thom, J. G. ..... Rochester

§Thompson, G. J.....Rochester
§Tillisch, J. H.....Rochester
Tobin, J. R., Jr. .....Rochester
Tompkins, S. F.....Rochester
Tondreau, R. L. .....Rochester
Tosseland, N. E.....Rochester
Uhler, W. M. .....Rochester
§Uihlein, Alfred.....Rochester
§Underdahl, L. O.....Rochester
Upshaw, Bette Y.....Rochester
Upshaw, Jackson E. .....Rochester
‡Urban, D. A.....Rochester
Van Cleve, H. P., Jr.....Rochester
Van Herik, Martin.....Rochester
§Vaughn, L. D.....Rochester
§Wagener, H. P.....Rochester
§Wakefield, E. G.....Rochester
Wakim, K. G.....Rochester
Walsh, A. C.....Rochester
§Walsh, M. N.....Rochester
§Walters, Waltman.....Rochester
Wang, Jun Chuam .....Rochester
‡Ward, B. H.....Rochester
§Watkins, C. H.....Rochester
Watkins, D. H.....Rochester
Watts, C. F. .....Rochester
Watts, W. E. .....Rochester
§Waugh, J. M.....Rochester
§Weber, H. M.....Rochester
§Weed, L. A.....Rochester
§Weir, J. F.....Rochester
Weisman, S. J.....Rochester
Wellman, W. E. .....Rochester
Wells, G. R.....Rochester
Wells, J. J.....Rochester
Wessel, M. A. .....Rochester
§Westrup, J. E.....Rochester
White, E. F., Jr. .Seattle, Washington
White, N. K.....Rochester
Whitesell, F. B.....Rochester
§Wilder, R. M.....Rochester
§Williams, H. L., Jr.....Rochester
Williams, R. R., Jr.....Rochester
†Williams, R. V. .....Rushford
§Willius, F. A.....Rochester
Wilmer, H. A.....Rochester
Wilson, G. T.....Rochester
§Wilson, R. B.....Rochester
Winchester, E. C. .....Rochester
Winchester, W. W.....Rochester
Wold, L. E.....Rochester
§Wollaeger, E. E.....Rochester
§Woltman, H. W.....Rochester
Wood, G. O. .....Rochester
§Wood, H. G.....Rochester
‡Wood, W. D.....Rochester
Woodard, D. E. .....Rochester
Woolner, L. B.....Rochester
Worden, R. E. .....Rochester
§Young, H. H.....Rochester
Zagaria, J. F. .....Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail and Wilkin Counties
Regular meetings quarterly
Annual meeting, December
Number of Members: 60

President
Paulson, T. S. .....Fergus Falls

Secretary
Baker, C. E.....Herman

Arndt, H. W.....Detroit Lakes
Baker, A. C.....Fergus Falls
Baker, C. E.....Herman
Baker, J. L. .....Fergus Falls
Baker, N. H.....Fergus Falls
Bergquist, K. E.....Battle Lake
Bigler, I. E.....Perham
Blakey, A. R.....Osakis
§Boline, C. A.....Battle Lake
Boyd, L. M.....Alexandria
§Burnap, W. L.....Fergus Falls
Cain, J. H.....Hoffman
§Carlson, C. E.....Alexandria
§Clifford, G. W.....Alexandria
Combacker, L. C.....Fergus Falls
Dwinnell, L. A. .....Fergus Falls
Emerson, E. E. .....Osakis
Esser, John.....Perham
§Estrem, C. O.....Fergus Falls
§Estrem, Ralph.....Fergus Falls
Estrem, R. D.....Fergus Falls
Gunlagson, F. G.....Fergus Falls
Hanson, E. C.....New York Mills
Haskell, A. D.....Alexandria
§Heiberg, E. A.....Fergus Falls
§Helseth, H. K.....Fergus Falls
Jacobs, G. C.....Fergus Falls
Jacobson, C. W.....Breckenridge
Kaliher, Howard .....Pelican Rapids
*§Kierland, P. E. .....Alexander
Korda, H. A. .....Pelican Rapids
Leibold, H. H.....Parkers Prairie
§Lewis, A. J.....Henning
§Lewis, Charles.....Henning
Love, F. A.....Carlos
§Lund, C. J. T.....Fergus Falls
Miller, W. A.....New York Mills
Mouritsen, G. J.....Fergus Falls
Naegeli, F. A.....Fergus Falls
Nelson, R. A.....Fergus Falls
Nelson, W. O. B.....Fergus Falls
§O'Brien, Louis T.....Breckenridge
Ostergaard, Erling.....Fergus Falls
Parson, Lillian B.....Elbow Lake
Parson, L. R.....Elbow Lake
Patterson, W. L.....Fergus Falls
§Paulson, E. C.....Elbow Lake
Paulson, T. S. .....Fergus Falls
Randall, A. M.....Ashby
Reeve, E. T.....Elbow Lake
Rockwood, P. H. .....Fergus Falls
Satersmoen, Theodore..Pelican Rapids
§Sather, E. R.....Alexandria
§Schamber, W. F.....Parkers Prairie
§Stemsrud, H. L.....Alexandria
Sutton, H. R.....Hoffman
§Tanquist, E. J.....Alexandria
§Thompson, H. B.....Fergus Falls
Warner, J. J.....Perham
§Wasson, L. F.....Alexandria
Wray, W. E.....Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday in every month excepting June, July, August
Annual meeting, last Monday in January
Number of Members: 415

President
Williams, C. K. .....St. Paul

Secretary
Hilger, L. D.....St. Paul

§Adair, A. F., Jr.....St. Paul
§Adler, B. C.....St. Paul
§Ahrens, A. E.....St. Paul
§Ahrens, A. H. .....St. Paul
*Alden, J. F. .....St. Paul
*Alden, J. F., Jr.....St. Paul
§Arnquist, A. S.....St. Paul
§Arny, F. P.....St. Paul
§Arzt, P. K.....St. Paul
§Aurelius, J. R.....St. Paul
§Ausman, C. F.....St. Paul
Babb, Frank S. .....St. Paul
§Bacon, D. K.....St. Paul
§†Bacon, L. C.....St. Paul
§Balcome, M. M. .....St. Paul
Barnett, J. M.....St. Paul
§Barry, L. W.....St. Paul
Barsness, N. O. N. .....St. Paul
Barton, John C.....St. Paul
§†Beals, Hugh.....St. Paul
§Beech, R. H.....St. Paul
§Beek, H. O.....St. Paul
Beer, J. J.....St. Paul
§Bell, C. C.....St. Paul
§Benepe, J. L.....St. Paul
§Bentley, N. P.....St. Paul
Bernstein, W. C.....St. Paul
§Bicek, J. F.....St. Paul
Binger, H. E.....St. Paul
Black, E. J.....St. Paul
§Bock, R. A.....St. Paul
Boeckmann, Egil.....St. Paul
§Bolender, H. L.....St. Paul
Borg, J. F.....St. Paul
§Bouma, L. R.....St. Paul
§Brand, G. D.....St. Paul
Bray, E. R.....St. Paul
§Briggs, J. F.....St. Paul
§Broadie, T. E.....St. Paul
§Brodie, W. D.....St. Paul
Brown, J. C.....St. Paul
Bulinski, T. J.....St. Paul
§Burch, E. P.....St. Paul
Burch, F. E.....St. Paul
Burlingame, David A.....St. Paul
§Burns, R. M.....St. Paul
Burton, C. G.....St. Paul
§Busher, H. H.....St. Paul
§Cain, C. L.....St. Paul
Callahan, F. F.....St. Paul
§Carley, W. A.....St. Paul
§Carroll, W. C.....St. Paul
§Chadbourn, C. R.....St. Paul
§Chatterton, C. C.....St. Paul
Chlad, A. J. .....St. Paul
§Christiansen, A.....St. Paul
§Clark, H. B., Jr. .....Minneapolis
Cochrane, B. B.....St. Paul
Coddon, W. D.....St. Paul
§Colby, W. L.....St. Paul
§Cole, W. H.....St. Paul
†Collie, H. G.....St. Paul
†Colvin, A. R. .....St. Paul
Connolly, C. J.....St. Paul
§Connor, C. E.....St. Paul
§Cook, C. K.....St. Paul
§Cooper, C. C.....St. Paul
§Countryman, R. S.....St. Paul
†Cowern, E. W.....No. St. Paul
§Craig, D. M.....St. Paul
§Critchfield, L. R.....St. Paul
Crombie, F. J.....No. St. Paul
§Crump, J. W.....St. Paul
§Culligan, J. M.....St. Paul
§Culver, L. G.....St. Paul
§Dack, L. G.....St. Paul
Dahlstet, J. P. .....St. Paul
†Daugherty, E. B...Marine-on-St. Croix
§Davis, E. V.....St. Paul
Decker, C. H.....St. Paul
§Dedolph, Karl.....St. Paul
§Derauf, B. I.....St. Paul
§Deters, D. C.....St. Paul
§Dickson, T. H.....St. Paul
Donohue, P. F.....St. Paul
Dovre, C. M.....St. Paul
§Drake, C. B.....St. Paul
§Dunn, J. N.....St. Paul
§Earl, G. A.....St. Paul
§Earl, J. R.....St. Paul
Earl, Robert.....St. Paul
§Edlund, Gustaf .....St. Paul
Edward, L. G. .....St. Paul
Edwards, J. W.....St. Paul
§Edwards, T. J.....St. Paul
Eginton, C. T.....St. Paul
Ely, O. S.....So. St. Paul
§Emerson, E. C.....St. Paul
§Endress, E. K.....St. Paul
Enroth, O. E.....St. Paul
Ernest, G. C. H.....So. St. Paul
§Ersfeld, Murray P.....St. Paul
†Eshelby, E. C.....St. Paul
Evert, J. A., Jr. .....St. Paul
†Fahey, E. W.....St. Paul
§Ferguson, J. C.....St. Paul
§Fessler, H. H.....St. Paul
Fink, D. L. .....St. Paul
Fisher, D. W. .....St. Paul
Fisher, Isadore.....St. Paul
§Flanagan, H. F.....St. Paul
Flink, E. B.....St. Paul
§Fogarty, C. W.....St. Paul
Fogarty, C. W., Jr. .....St. Paul
§Fogelberg, E. J.....St. Paul
§Foley, F. E. B.....St. Paul
Forsythe, J. R. .....St. Paul
†Freeman, C. D. .....St. Paul
Freidman, L. L.....St. Paul
Fritz, W. L.....St. Paul
§Froats, C. W.....St. Paul
Frost, Russell H.....St. Paul
§Garbrecht, A. W.....St. Paul
Gardiner, D. G.....St. Paul
§Gardner, W. P.....St. Paul
Garrow, D. M.....St. Paul
Garthe, J. J.....St. Paul
§Geer, E. K.....St. Paul
§Gehlen, J. N.....St. Paul
§Geist, G. A.....St. Paul
§Ghent, Harry.....St. Paul
§Gibbs, E. C.....St. Paul
Gibson, D. P. .....St. Paul
†Gilfillan, J. S. .....St. Paul
Gilkey, S. E.....St. Paul
Gillespie, D. R.....St. Paul
*†Ginsberg, William .....St. Paul
Gleason, W. A.....St. Paul
Goldsmith, J. W. .....St. Paul

Goltz, E. V. ..... St. Paul
Grant, H. W. ..... St. Paul
Gratzek, Thomas ..... St. Paul
Grau, R. K. ..... St. Paul
Gruenhagen, A. P. ..... St. Paul
†Hall, A. R. ..... St. Paul
Hall, H. H. ..... St. Paul
Hammes, E. M. ..... St. Paul
Hammes, E. M., Jr. ..... St. Paul
Hammond, J. F. ..... St. Paul
Hanson, H. B. ..... St. Paul
Harmon, G. E. ..... St. Paul
Hartfiel, W. F. ..... St. Paul
Hartig, Marjorie ..... St. Paul
Hartley, E. C. ..... St. Paul
Hassett, M. F. ..... St. Paul
Hauser, V. P. ..... St. Paul
Hayes, A. F. ..... St. Paul
Heck, W. W. ..... St. Paul
Hedenstrom, F. G. ..... St. Paul
Henderson, A. J. G. ..... St. Paul
Hengstler, W. H. ..... St. Paul
Hensel, C. N. ..... St. Paul
Herman, S. M. ..... St. Paul
Heron, R. C. ..... St. Paul
Herrmann, E. T. ..... St. Paul
Hertz, M. J. ..... St. Paul
§Hilger, A. W. ..... St. Paul
§Hilger, D. D. ..... St. Paul
*§Hilger, L. A. ..... St. Paul
§Hilger, J. A. ..... St. Paul
§Hilger, L. D. ..... St. Paul
Hilker, M. D. ..... St. Paul
Hiniker, L. P. ..... St. Paul
§Hochfilzer, J. J. ..... St. Paul
Hodgson, Jane E. ..... St. Paul
§Hoff, Alfred ..... St. Paul
Holcomb, O. W. ..... St. Paul
§Hollinshead, W. H. ..... St. Paul
§Holmen, R. W. ..... St. Paul
§Holt, J. E. ..... St. Paul
Hopkins, G. W. ..... St. Paul
Howard, M. A. ..... St. Paul
Howard, W. S. ..... St. Paul
Howe, N. W. ..... St. Paul
§Hullsiek, H. E. ..... St. Paul
§Hullsiek, R. B. ..... Minneapolis
Hultgen, W. J. ..... St. Paul
Hurwitz, M. M. ..... St. Paul
§†Ide, A. W. ..... St. Paul
Ikeda, Kano ..... St. Paul
Ingerson, C. A. ..... St. Paul
Janssen, M. E. ..... St. Paul
Jesion, J. W. ..... St. Paul
§Johanson, W. G. ..... St. Paul
§Johnson, A. M. ..... St. Paul
§Johnson, C. E. ..... St. Paul
Johnson, J. A. ..... St. Paul
Jones, E. M. ..... St. Paul
§Kamman, G. R. ..... St. Paul
Kaplan, D. H. ..... St. Paul
Karon, I. M. ..... St. Paul
§Kasper, E. M. ..... St. Paul
Katz, L. L. ..... St. Paul
Katzovitz, Hyman ..... St. Paul
Keefe, R. E. ..... St. Paul
§Kelly, J. V. ..... St. Paul
*Kelly, P. H. ..... St. Paul
§Kelsey, C. M. ..... St. Paul
§Kenefick, E. V. ..... St. Paul
§Kennedy, W. A. ..... St. Paul
§Kenyon, T. J. ..... St. Paul
§Kesting, Herman ..... St. Paul
King, G. L. ..... St. Paul
Kleifgen, G. V. H. ..... St. Paul
§Klein, H. N. ..... St. Paul
*§†Knauff, M. K. ..... St. Paul
§Knutson, G. E. ..... St. Paul
§Kugler, A. A. ..... St. Paul
§Kuske, A. W. ..... St. Paul
Kvitrud, Gilbert ..... St. Paul
§Lannin, B. G. ..... St. Paul
§Larsen, C. L. ..... St. Paul
Larson, Eva-Jane ..... St. Paul
Larson, J. T. ..... South St. Paul
Larson, K. R. ..... St. Paul
Lax, M. H. ..... St. Paul
§Leahy, Bartholomew ..... St. Paul
§Leavenworth, R. O. ..... St. Paul
Leick, R. M. ..... St. Paul
§Leitch, Archibald ..... St. Paul
§Lepak, J. A. ..... St. Paul
†Lerche, William ..... Cable, Wis.
§Leven, N. L. ..... St. Paul
§Leverenz, C. W. ..... St. Paul
Levin, Bert ..... St. Paul
Levitt, G. X. ..... St. Paul
§Lick, C. L. ..... St. Paul
Lien, R. J. ..... St. Paul
§Lightbourn, E. L. ..... St. Paul
Lilleberg, N. J. ..... St. Paul
Lippman, H. S. ..... St. Paul
§Loken, S. M. ..... St. Paul
Lowe, E. R. ..... So. St. Paul
Lowe, T. A. ..... So. St. Paul
§Lundholm, A. M. ..... St. Paul
§Lynch, F. W. ..... St. Paul
McAdams, J. B. ..... St. Paul
McCain, D. L. ..... St. Paul
McCarthy, J. J. ..... St. Paul
McCarthy, W. R. ..... St. Paul
McClanahan, J. H. ..... White Bear
McClanahan, T. S. ..... White Bear
§McCloud, C. N. ..... St. Paul
§McEwan, Alexander ..... St. Paul
†McLaren, Jennette M. ..... Minneapolis
§Madden, J. F. ..... St. Paul
Madland, Robert S. ..... St. Paul
Maertz, W. F. ..... St. Paul
§Malerich, J. A. ..... St. Paul
Marks, R. W. ..... St. Paul
Martin, D. L. ..... St. Paul
§Martineau, J. L. ..... St. Paul
§Meade, J. R. ..... St. Paul
§Mears, B. J. ..... St. Paul
§Medelman, J. P. ..... St. Paul
Melancon, J. F. ..... St. Paul
Menold, W. F. ..... St. Paul
Merendino, A. A. ..... St. Paul
Merner, T. B. ..... St. Paul
§Meyerding, E. A. ..... St. Paul
§Moga, J. A. ..... St. Paul
Molander, H. A. ..... St. Paul
Moquin, Marie A. ..... St. Paul
Moriarty, Berenice ..... St. Paul
Moriarty, Cecile R. ..... St. Paul
Muller, A. E. ..... North St. Paul
§Muller, R. T. ..... St. Paul
Naegeli, A. E. ..... St. Paul
§Nash, L. A. ..... St. Paul
Nelson, L. A. ..... St. Paul
§Nichols, A. E. ..... St. Paul
§Noble, J. F. ..... St. Paul
§Noble, J. L. ..... St. Paul
Nuebel, C. J. ..... St. Paul
Nye, Katherine A. ..... St. Paul
Nye, Lillian L. ..... St. Paul
O'Brien, W. M. ..... St. Paul
O'Connor, L. J. ..... St. Paul
*Oerting, Harry ..... St. Paul
§Ockuly, O. E. ..... St. Paul
§Ogden, Warner ..... St. Paul
§Ohage, Justus Jr. ..... St. Paul
O'Kane, T. W. ..... St. Paul
§Olsen, R. L. ..... St. Paul
Olson, C. A. ..... St. Paul
§O'Reilley, B. E. ..... St. Paul
§Ostergren, E. W. ..... St. Paul
§Ouellette, A. J. ..... St. Paul
§Pearson, F. R. ..... St. Paul
Pearson, M. M. ..... St. Paul
Pedersen, A. H. ..... St. Paul
§Perry, C. G. ..... St. Paul
Peterson, D. B. ..... St. Paul
§Peterson, H. O. ..... St. Paul
§Peterson, J. L. E. ..... St. Paul
§Plondke, F. J. ..... St. Paul
§Prendergast, H. J. ..... St. Paul
Quattlebaum, F. W. ..... St Paul
Radabaugh, R. C. ..... Hastings
§Ralph, J. R. ..... St. Paul
§†Ramsey, W. R. ..... St. Paul
Rasmussen, R. C. ..... St. Paul
§Rea, C. E. ..... St. Paul
Reid, J. W. ..... St. Paul
§Richards, E. T. F. ..... St. Paul
§Richardson, H. E. ..... St. Paul
§Richardson, R. J. ..... St. Paul
Rick, P. F. W. ..... St. Paul
Rinkey, Eugene ..... St. Paul
§Ritchie, W. P. ..... St. Paul
§Ritt, A. E. ..... St. Paul
§Rogers, S. F. ..... St. Paul
Rolig, D. H. ..... St. Paul
Rosenholtz, Burton ..... St. Paul
§Rosenthal, Robert ..... St. Paul
§Roth, G. C. ..... St. Paul
§Rothschild, H. J. ..... St. Paul
§Roy, P. C. ..... St. Paul
§†Ruhlberg, G. N. ..... Tarzona, Calif.
Rutherford, W. C. ..... Nisswa
Ryan, James D. ..... St. Paul
§Ryan, J. J. ..... St. Paul
§Ryan, J. M. ..... St. Paul
§Ryan, M. E. ..... St. Paul
§Sarnecki, M. M. ..... St. Paul
Satterlund, V. L. ..... St. Paul
§Savage, F. J. ..... St. Paul
Schmidtke, R. L. ..... St. Paul
Schoch, R. B. J. ..... St. Paul
§Schons, Edward ..... St. Paul
§Schroeckenstein, H. F. ..... St. Paul
§†Schuldt, F. C. ..... St. Paul
§Schulze, A. G. ..... St. Paul
§Schwyzer, H. C. ..... St. Paul
§Scott, E. E. ..... St. Paul
Seknon, M. S. ..... St. Paul
†Senkler, G. E. ..... St. Paul
§Setzer, H. J. ..... St. Paul
Shannon, W. R. ..... St. Paul
Sheehan, J. R. ..... St. Paul
†Shellman, J. T. ..... Santa Monica, Calif.
§Shimonek, S. W. ..... St. Paul
Short, Jacob ..... St. Paul
Siegel, Clarence ..... St. Paul
§Simons, L. T. ..... St. Paul
Singer, B. J. ..... St. Paul
Sisk, H. E. ..... Hastings
†Skinner, H. O. ..... St. Paul
§Smisek, E. A. ..... St. Paul
§Smith, V. D. E. ..... St. Paul
§Snyder, G. W. ..... St. Paul
§Sohlberg, O. I. ..... St. Paul
§Sommers, Ben ..... St. Paul
§Sorem, M. B. ..... St. Paul
Soucheray, P. H. ..... St. Paul
§Souster, B. B. ..... St. Paul
§Sprafka, J. M. ..... St. Paul
§Steinberg, C. L. ..... St. Paul
§Sterner, E. G. ..... St. Paul
§Sterner, E. R. ..... St. Paul
Sterner, J. J. ..... St. Paul
§Sterner, O. W. ..... St. Paul
Stewart, Alexander ..... St. Paul
Stolpestad, A. H. ..... St. Paul
§Stolpestad, H. L. ..... St. Paul
§Strate, G. E. ..... St. Paul
Straus, M. L. ..... St. Paul
Strem, E. L. ..... St. Paul
Sturley, Rodney F. ..... St. Paul
Swanson, J. A. ..... St. Paul
§Swendson, J. J. ..... St. Paul
§Teisberg, C. B. ..... St. Paul
§Teisberg, J. E. ..... St. Paul
Thompson, F. A. ..... St. Paul
Thoreson, M. C. Bernice ..... So. St. Paul
Tifft, C. R. ..... St. Paul
§Tracht, R. R. ..... St. Paul
Travis, J. S. ..... St. Paul
§Tregilgas, H. R. ..... So. St. Paul
Varco, R. L. ..... St. Paul
Veirs, Dean ..... St. Paul
Veirs, Ruby J. S. ..... St. Paul
§Venables, A. E. ..... St. Paul
§Von der Weyer, W. H. ..... St. Paul
§Waas, C. W. ..... St. Paul
§Walker, A. E. ..... St. Paul
§Walter, C. W. ..... St. Paul
§†Ward, P. D. ..... St. Paul
Warren, C. A. ..... St. Paul
Watson, P. T. ..... St. Paul
Watson, W. J. ..... Newport
Watz, C. E. ..... St. Paul
§Webber, F. L. ..... St. Paul
§Weis, B. A. ..... St. Paul
§Weisberg, Maurice ..... St. Paul
§Wenzel, G. P. ..... St. Paul
Werner, O. S. ..... Cambridge
†Wheeler, M. W. ..... St. Paul
†Whiteacre, J. C. ..... St. Paul
Williams, A. B. ..... St. Paul
§Williams, C. K. ..... St. Paul
§Williams, J. A. ..... St. Paul
§Wilson, J. A. ..... St. Paul
§Wilson, J. V. ..... St. Paul
Winnick, J. B. ..... St. Paul
§Wold, K. C. ..... St. Paul
§Wolff, H. J. ..... St. Paul
Wolkoff, H. J. ..... St. Paul
Word, H. L. ..... St. Paul
Youngren, E. R. ..... St. Paul
Zachman, L. L. ..... St. Paul
§Zimmermann, H. B. ..... St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties

Regular meetings quarterly—Annual meeting, December

Number of Members: 63

President

Bechtal, M. J. ..... Warren

Secretary

Sather, R. O. ..... Crookston

§Adkins, C. M. ..... Thief River Falls
Anderson, W. E. ..... Clearbrook
Bechtel, M. J. ..... Warren
§Behr, O. K. ..... Crookston
Berge, D. O. ..... Roseau
Berlin, A. S. ..... Hallock
†§Bertelsen, O. L. ..... Crookston
Biedermann, Jacob ..... Thief River Falls

Boynton, Bruce ..... Ada
§Bratrud, Edward.... Thief River Falls
Bratrud, T. E..... Thief River Falls
Brink, A. A..... Baudette
§Brown, L. L..... Crookston
Cameron, J. H. ..... Crookston
Canfield, A. ..... Thief River Falls
Carlson, A. E..... Warren
Covey, K. W..... Mahnomen
Delmore, John L. Jr..... Roseau
§Delmore, John L., Sr..... Roseau
Delmore, R. J..... Roseau
§Erickson, Eskil..... Halstad
Fraser, F. A. ..... Thief River Falls
Freedland, M. ..... Fosston
Haberle, C. A. .... Thief River Falls
§Henney, W. H..... McIntosh
Hollands, W. H..... Fisher
Holmstrom, C. H..... Warren
Janecky, A. G..... Warroad
Johnson, E. A. ..... Thief River Falls
Johnson, H. C..... Thief River Falls
Johnson, R. E..... Crookston
Kirk, G. P..... East Grand Forks
Klefstad, L. H. ..... Greenbush
Knutson, G. A..... Hallock
§Kostick, W. R..... Fertile
Lehman, S. J. ..... Thief River Falls
§Loken, Theodore..... Ada
Lynde, O. G. ..... Los Gatos, Calif.
§Mellby, O. F..... Thief River Falls
§Mercil, W. F..... Crookston
*Morley, G. A. ..... Crookston
Nelson, A. S..... Thief River Falls
Nelson, H. E..... Crookston
Nietfeld, A. B. ..... Warren
§Norman, J. F..... Crookston
§Oppegaard, C. L..... Crookston
§Oppegaard, M. O..... Crookston
Parsons, J. G. ..... Crookston
Pearson, L. O..... Warroad
Pumala, E. F. ..... Warren
§Reff, A. R..... Crookston
Rodwell, T. F. ..... Mahnomen
§Rydland, A. D..... Crookston
†Sather, Allen..... Fosston
§Sather, G. A..... Fosston
§Sather, R. O..... Crookston
§Shedlov, Abraham..... Fosston
§Starekow, M. D. ..Thief River Falls
Stensgaard, K. L....Thief River Falls
*Stevens, John..... Gonvick
§Uhley, C. G..... Crookston
Van Rooy, G. T....Thief River Falls
Watson, R. M..... Thief River Falls
§Wiltrout, I. G..... Oslo
Zorn, E. L..... Erskine

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, May
Number of Members: 32

President
Dubbe, F. H. ..... New Ulm

Secretary
Fesenmaier, O. B..... New Ulm

Anderson, D. C. ..... Lamberton
Bergman, O. B..... St. James
Black, W. A. ..... New Ulm
Bratrude, E. J..... St. James
§Bregel, F. L..... St. James
§Cairns, R. J..... Redwood Falls
Coulter, H. E. ..... Madelia
§Domeier, L. H. ..... New Ulm
§Dubbe, F. H..... New Ulm
§Dysterheft, A. F..... Gaylord
§Esser, O. J. ..... New Ulm
§Fesenmaier, O. B..... New Ulm
§Fritsche, Albert..... New Ulm
§Fritsche, C. J..... New Ulm
§Fritsche, T. R..... New Ulm
§Gibbons, F. C..... Comfrey
§Goblirsch, A. P..... Sleepy Eye
*§Hammerseister, T. E. ..... New Ulm
§Hovde, Rolf..... Winthrop
Just, H. J. ..... Hastings
§Keithahn, E. E..... Sleepy Eye
§Kruzick, S. J..... Sleepy Eye
§Kusske, A. L..... New Ulm
§Nelson, Glen ..... Fairfax
Nuessle, W. G..... Springfield
§Penk, E. L. ..... Springfield
Peterson, R. A..... Vesta
§Reineke, G. F..... New Ulm
§Saffert, C. A..... New Ulm
§Schroeppel, J. E..... Winthrop
§Seifert, O. J..... New Ulm
§Vogel, H. A. L..... New Ulm
*§Vogel, J. H. ..... New Ulm
*Weiser, G. B..... New Ulm
§Wohlrabe, E. J..... Springfield

RENVILLE COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of month
Annual meeting, November
Number of Members: 21

President
Johnson, O. H. ..... Redwood Falls

Secretary
Hinz, Walter ..... Bird Island

§Adams, R. C..... Bird Island
§Billings, R. E..... Franklin
§Brand, W. A..... Redwood Falls
§Ceplecha, S. F..... Redwood Falls
§Cosgriff, J. A..... Olivia
§Dordal, J..... Sacred Heart
§Erickson, R. E..... Hector
§Fawcett, A. M..... Renville
Flinn, T. E..... Redwood Falls
§Gaines, E. C..... Buffalo Lake
Heinz, I. B. ..... Wabasso
Heinz, L. H. ..... Wabasso
§Hinz, W. E..... Bird Island
*Johnson, H. E..... Bird Island
§Johnson, O. H..... Redwood Falls
§Johnson, W. E..... Morgan
Lenz, J. R..... Morton
Mesker, G. H..... Cambridge
§Passer, A. A..... Olivia
Potthoff, C. J..... Washington, D. C.
Priesinger, J. W..... Renville
§Walsh, J. F..... Olivia

RICE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, June
Number of Members: 31

President
Rumpf, C. W. ..... Faribault

Secretary
Francis, D. W. ..... Morristown

Belshe, J. C..... Northfield
§Dungay, N. S..... Northfield
§Engberg, E. J..... Faribault
Francis, D. W..... Morristown
§Hanson, A. M..... Faribault
§Hanson, J. W..... Northfield
Huxley, F. R..... Faribault
§Kennedy, G. L..... Faribault
Kolars, J. J. ..... Faribault
§Lende, Norman..... Faribault
Lexa, F. J..... Lonsdale
McKeon, J. O..... Faribault
§Mears, R. F..... Northfield
Meyer, F. C..... Kenyon
Meyer, P. F..... Faribault
*Moses, Joseph, Jr..... Northfield
§Moses, R. R..... Kenyon
§Nielsen, A. M..... Northfield
§Nuetzman, A. W..... Faribault
Peterson, D. H..... Northfield
§Robilliard, C. M..... Faribault
Rohrer, C. A..... Waterville
Rumpf, C. W..... Faribault
†Rumpf, W. H..... Faribault
§Stevenson, F. W..... Faribault
§Street, Bernard..... Northfield
§Studer, D. J..... Faribault
Traeger, C. A..... Faribault
§Weaver, P. H..... Faribault
West, E. J. ..... Fort Thomas, Ky.
Wilkinson, S. L. ..... Faribault
§Wilson, W. E..... Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties
Regular meetings, second Thursday every month except July and August
Annual meeting, December
Number of Members: 241

President
Rudie, P. S. ..... Duluth

Secretary
Johnson, K. E. ..... Duluth

§Abraham, A. L..... Duluth
§Adams, B. S..... Hibbing
Addy, E. R..... Gilbert
Anderson, C. L..... Ely
Anderson, H. R..... Deer River
§†Arhelger, S. W..... Duluth
§Arko, J. L..... Hibbing
§Armstrong, E. L..... Duluth
§Athens, A. G..... Duluth
*Ayres, G. T. ..... Ely
§Bachnik, F. W..... Hibbing
§Backus, R. W..... Nopeming
§Bagley, C. M..... Duluth
Bagley, Elizabeth C..... Duluth
§Bagley, W. R..... Duluth
Baich, V. M..... Bovey
§Bakkila, H. E..... Duluth
§Bardon, Richard..... Duluth
§Barker, J. D..... Duluth
Barney, L. A..... Duluth
§Barrett, E. E..... Duluth
§Becker, F. T..... Duluth
Bepko, Marie K..... Cloquet
Berdez, G. L..... Duluth
Bergen, R. O. ..... Duluth
§Bianco, A. J..... Duluth
†Binet, H. E..... Grand Rapids
§Blackmore, S. C..... Biwabik
Bolz, J. A..... Grand Rapids
Boman, P. G. ..... Duluth
Booren, J. C..... Duluth
§Bowen, R. L..... Hibbing
§Boyer, S. H., Jr..... Duluth
Boyer, S. H., Sr..... Duluth
Braun, O. C. ..... Nashwauk
§Bray, P. N..... Duluth
§Bray, R. B..... Biwabik
Brooker, W. J. ..... Duluth
§Buckley, R. P..... Duluth
Burns, Catherine ..... Duluth
§Butler, J. K..... Carlton
Cantwell, W. F....International Falls
§*Carstens, C. E..... Hibbing
Chapman, T. L..... Duluth
§Chermak, F. G....International Falls
§Christenson, C. H..... Duluth
§Clark, I. T..... Duluth
§Clarke, E. T..... Buhl
§Cole, Frank..... Duluth
§Coll, J. J..... Duluth
Collins, A. N..... Duluth
†Collins, H. C..... Duluth
§Coventry, W. A..... Duluth
§Coventry, W. D..... Duluth
Cunningham, C. B..... Virginia
Dahlin, I. T..... Aurora
§Derifield, R. S..... Hibbing
§Dickson, F. H., Jr..... Proctor
§Dittrich, R. J..... Duluth
§Doolittle, L. E..... Duluth
Doyle, G. C..... Duluth
§Eckman, P. F..... Duluth
§Eckman, R. J..... Duluth
§Eisenman, Walter..... Coleraine

§Ekblad, J. W. ..... Duluth
§Elias, F. J. ..... Duluth
§Emanual, K. W. ..... Duluth
Eppard, R. M. ..... Cloquet
§Erskine, G. M. ..... Grand Rapids
§Estrem, T. A. ..... Hibbing
§Ewens, H. B. ..... Virginia
Fawcett, K. R. ..... Duluth
Felion, A. J. ..... Two Harbors
§Fellows, M. F. ..... Duluth
Ferrell, C. R. ..... Grand Rapids
§Fischer, M. McC. ..... Duluth
§Fiskett, Henry ..... Duluth
§Flynn, B. F. ..... Hibbing
§Fredericks, M. G. ..... Duluth
*Gendron, J. F. ..... Grand Rapids
§Gillespie, M. G. ..... Duluth
§Goldish, D. R. ..... Duluth
§Goodman, C. E. ..... Virginia
§Gowan, L. R. ..... Duluth
§Graham, A. W. ..... Chisholm
§Grahek, J. P. ..... Ely
§Graves, W. N. ..... Duluth
Grinley, A. V. ..... Grand Rapids
Halme, W. B. ..... Cloquet
Haney, C. L. ..... Duluth
§Hansen, R. E. ..... Hibbing
§Hanson, E. O. ..... Cloquet
§Harris, C. N. ..... Hibbing
Hatch, W. E. ..... Duluth
Hathaway, S. J. ..... Chehalis, Wash.
§Hayes, M. F. ..... Nashwauk
§Hedberg, G. A. ..... Nopeming
Heiam, W. C. ..... Cook
§Hilding, A. C. ..... Duluth
Hill, F. E. ..... Duluth
Hirschboeck, F. J. ..... Duluth
§Hoff, H. O. ..... Duluth
§Houkom, S. S. ..... Duluth
Hutchinson, Henry ..... Moose Lake
§Jacobson, Clarence ..... Chisholm
§Jacobson, F. C. ..... Duluth
§Jensen, T. J. ..... Duluth
§Jeronimus, H. J. ..... Duluth
§Jessico, C. M. ..... Duluth
§Joffe, H. H. ..... Duluth
§Johnson, K. E. ..... Duluth
§Johnsrud, L. W. ..... Chisholm
§Jolin, F. M. ..... Bovey
§Kelley, A. C. ..... Duluth
§Kelley, K. J. ..... Bigfork
Kemp, M. W. North Madison, Indiana
§Klein, Harry ..... Duluth
Klein, W. A. ..... Duluth
§Knapp, F. N. ..... Duluth
§Knoll, W. V. ..... Duluth
§Kohlbry, C. O. ..... Duluth
§Kitchevar, F. R. ..... Eveleth
Koskela, A. L. ..... Deer River
Koskela, L. E. ..... Deer River
§Krueger, V. R. ..... Nopeming

§La Bree, R. H. ..... Duluth
§Laird, A. T. ..... Duluth
Lenont, C. B. ..... Virginia
Lepak, F. J. ..... Duluth
§Litman, S. N. ..... Duluth
§Loofbourrow, E. H. ..... Keewatin
§Luth, D. V. ..... Duluth
†McCoy, Mary K. ..... Duluth
McDonald, A. L. ..... Duluth
§McHaffie, O. L. ..... Duluth
McKenna, M. J. ..... Grand Rapids
McLane, W. O. ..... Duluth
§McLeod, J. L. ..... Grand Rapids
§McNutt, J. R. ..... Duluth
§Macfarlane, P. H. ..... Chisholm
§MacRae, G. C. ..... Duluth
§Magney, F. H. ..... Duluth
Magraw, R. M. ..... St. Paul
§Malmstrom, J. A. ..... Virginia
*§Manley, J. R. ..... Duluth
†Marcley, W. J. ..... Minneapolis
§Martin, W. C. ..... Duluth
†§Mayne, R. M. ..... Duluth
Mead, C. H. ..... Duluth
§Merriman, L. L. ..... Duluth
Meyer, J. O. ..... Grand Rapids
§Minty, E. W. ..... Duluth
§Moe, R. J. ..... Duluth
Moe, Thomas ..... Moose Lake
Moehring, H. G. ..... Duluth
Mollers, T. P. ..... Soudan
Monroe, P. B. ..... Cloquet
Monserud, N. O. ..... Cloquet
*Mare, C. W. ..... Eveleth
§Morsman, L. W. ..... Hibbing
Mueller, Selma C. ..... Duluth
§Murray, R. A. ..... Hibbing
Neff, W. S. ..... Virginia
§Nelson, E. H. ..... Chisholm
Nelson, L. S. ..... Minneapolis
§Nelson, R. L. ..... Duluth
§Nicholson, M. A. ..... Duluth
Norberg, C. E. ..... Cloquet
§Nutting, R. E. ..... Duluth
§Olson, A. E. ..... Duluth
Olson, A. O. ..... Duluth
Palmer, H. A. ..... Blackduck
Papermaster, Ralph ..... Two Harbors
†Parker, O. W. ..... Duluth
§Parker, W. H. ..... Chisholm
§Parson, E. I. ..... Duluth
Pasek, A. W. ..... Cloquet
§Patch, O. B. ..... Duluth
Patterson, S. A. ..... Duluth
Pearsall, R. P. ..... Virginia
§Pederson, R. C. ..... Duluth
Pennie, D. F. ..... Duluth
Peterson, E. N. ..... Virginia
Peterson, J. H. ..... Minneapolis
Pfuetze, K. H. ..... Cannon Falls
Pollard, W. H., Jr. ..... Duluth

§Power, J. E. ..... Duluth
Puumala, R. H. ..... Cloquet
§Raadquist, C. S. ..... Hibbing
§Raihala, John ..... Virginia
§Raiter, R. F. ..... Cloquet
§Reed, Paul ..... Virginia
†Robinson, J. M. ..... Goshen, N. Y.
§Rokala, H. E. ..... Virginia
§†Rood, D. C. ..... Duluth
Rowe, O. W. ..... Duluth
§Rowles, E. K. ..... Coleraine
§Rudie, P. S. ..... Duluth
§Ryan, W. J. ..... Duluth
Sach-Rowitz, Alvin ..... Moose Lake
§Salter, R. A. ..... Virginia
Sandell, S. T. ..... Nopeming
§Sarff, O. E. ..... Duluth
Sax, M. H. ..... Duluth
Sax, S. G. ..... Duluth
§Schneider, L. E. ..... Duluth
§Schroder, C. H. ..... Duluth
Schweiger, T. R. ..... Hibbing
§Seashore, R. T. ..... St. Paul
Shaw, A. W. ..... Virginia
§Sher, D. A. ..... Virginia
Siegel, J. S. ..... Virginia
§Sinamark, Andrew ..... Hibbing
Sisler, C. E. ..... Grand Rapids
§Smith, C. M. ..... Duluth
Smith, W. R. ..... Grand Marais
Snyker, O. E. ..... Ely
§Spang, A. J. ..... Duluth
§Spang, J. S. ..... Duluth
§Spicer, F. W. ..... Duluth
Spurbeck, R. G. ..... Cloquet
Strathern, M. L. ..... Gilbert
§Strauss, E. C. ..... Duluth
§Strobel, W. G. ..... Duluth
Stuart, A. B. ..... Cloquet
§Sutherland, H. N. ..... Ely
Swedberg, W. A. ..... Duluth
§Swenson, A. O. ..... Duluth
§Taylor, C. W. ..... Duluth
§Teich, K. W. ..... Duluth
§Terrell, B. J. ..... Nopeming
§Tibbetts, M. H. ..... Duluth
Tilderquist, D. L. ..... Duluth
§Tingdale, Carlyle ..... Hibbing
§Tuohy, E. L. ..... Duluth
§Urberg, S. E. ..... Duluth
Van Ryzin, D. J. ..... Duluth
Van Valkenberg, J. D. ..... Floodwood
§†Walker, A. E. ..... Duluth
§Wallace, M. O. ..... Duluth
§Wells, A. H. ..... Duluth
Wheeler, D. W. ..... Duluth
Williams, B. F. P. ..... Duluth
Winter, J. A. ..... Duluth
§Young, T. O. ..... Duluth
†Zlatovski, M. L. ..... Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of the alternate months
Annual meeting, June
Number of Members: 28

President
Olson, C. J. ..... Belle Plaine

Secretary
Schimelpfenig, G. T. ..... Chaska

Bodaski, A. A. ..... Montgomery
Bratholdt, J. W. ..... Watertown
§Buck, F. H. ..... Shakopee
§Carlson, N. C. ..... Watertown
§Cervenka, C. F. ..... New Prague
§Doherty, E. M. ..... New Prague

Hass, F. M. ..... Jordan
§Havel, H. W. ..... Jordan
§Hebeisen, M. B. ..... Chaska
§Juergens, H. M. ..... Belle Plaine
§Juergens, H. M. ..... Belle Plaine
Klein, J. C. ..... Shakopee
§Kortsch, F. P. ..... Prior Lake
§Kucera, S. T. ..... Lonsdale
Martin, T. P. ..... Arlington
Nagel, H. D. ..... Waconia
Nelson, K. L. ..... Clara City
Ninneman, N. N. ..... Waconia

Novak, E. E. ..... New Prague
Olson, C. J. ..... Belle Plaine
§Pearson, B. F. ..... Shakopee
Pearson, R. T. ..... Shakopee
§Ponterio, J. E. ..... Shakopee
*†Reiter, H. W. ..... Shakopee
Schimelpfenig, G. T. ..... Chaska
§Simons, B. H. ..... Chaska
§†Westerman, A. E. ..... Montgomery
§Westerman, F. C. ..... Montgomery
Wiechman, F. H. ..... Minneapolis
*Wunder, H. E. ..... Shakopee

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Cottonwood, Jackson, Murray, Nobles, Pipestone and Rock Counties.
Regular meetings, at call
Annual meeting, October
Number of Members: 61

President
Schade, F. L. ..... Worthington

Secretary
Mork, B. O., Jr. ..... Worthington

Anderson, O. W. ..... Luverne
§Arnold, E. W. ..... Adrian
§Balmer, A. I. ..... Pipestone
§Basinger, H. P. ..... Windom
Basinger, H. R. ..... Mountain Lake
Beckering, Gerrit ..... Edgerton
§Benjamin, W. G. ..... Pipestone
Bofenkamp, F. W. ..... Luverne
†Brown, A. H. ..... Pipestone
Burleigh, J. S. ..... Luverne
§Carlson, J. V. ..... Westbrook
§Christiansen, H. A. ..... Jackson

Chunn, S. S. ..... Pipestone
§DeBoer, Hermanus ..... Edgerton
§Doman, V. W. ..... Lakefield
Doms, H. C. A. ..... Slayton
§Hallin, R. P. ..... Worthington
Halloran, W. H. ..... Jackson
§Halpern, D. J. ..... Brewster
§Harrison, P. W. ..... Worthington
Hebbel, Robert ..... Minneapolis
§Heiberg, O. M. ..... Worthington
§Hitchings, W. S. ..... Lakefield
Hoyer, L. J. ..... Windom
§Johnson, M. A. ..... Storden
§Johnson, R. M. ..... Slayton
Kabrick, O. A. ..... Jackson
§Karleen, B. N. ..... Jackson
§Kilbride, E. A. ..... Worthington

†Kilbride, J. S. ..... Worthington
§Laikola, L. A. ..... Adrian
§Lohmann, J. G. ..... Pipestone
§Maitland, E. T. ..... Jackson
†Manson, F. M. ..... Worthington
§Mork, B. O., Sr. ..... Worthington
§Mork, B. O., Jr. ..... Worthington
§Nealy, D. E. ..... Adrian
§Nickerson, J. R. ..... Heron Lake
§Pankratz, P. J. ..... Mountain Lake
§Patterson, H. D. ..... Slayton
§Pierson, R. F. ..... Slayton
§Piper, W. A. ..... Mountain Lake
Rogers, C. W. ..... Minneapolis
Rose, J. T. ..... Lakefield
§Schade, F. L. ..... Worthington
§Schmidt, W. R. ..... Worthington

§Schutz, E. S.....Mountain Lake
Sherman, C. L.....Luverne
§Slater, S. A.....Worthington
§Sogge, L. L.....Windom
§Sorum, F. T.....Jasper

§Stam, John.....Worthington
Stanley, C. R.....Worthington
Stevenson, B. M.....Fulda
Stratte, H. C.....Windom
Waller, J. D.....Pine City

§Wells, W. B.....Jackso
§Williams, C. A.....Pipeston
Williams, L. A.....Minneapol
§Williamson, H. A.....Heron Lak
Wolff, Helen B.....Worthingto

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, third Thursday of month
Annual meeting, third Thursday of December
Number of Members: 59

President
Zachman, A. H.....Melrose

Secretary
Libert, J. N.....St. Cloud

§Baumgartner, F. H.....Albany
Beuning, J. B.....St. Cloud
Brigham, C. F.....St. Cloud
§Buscher, J. C.....St. Cloud
§Clark, H. B.....St. Cloud
Cleaves, W. D.....Sauk Center
§Conway, J. E.....St. Cloud
§Donaldson, C. S.....Foley
Du Bois, J. F.....Sauk Center
Emerson, E. E.....Osakis
Engstrom, G. F.....Belgrade
§Evans, L. M.....Sauk Rapids
§Fleming, T. N.....St. Cloud
§Friesleben, William.....Sauk Rapids
§Gaida, J. B.....St. Cloud
§Goehrs, G. H.....St. Cloud

Goehrs, H. W.....St. Cloud
§Grant, J. C.....Sauk Center
§Haberman, Emil.....Osakis
§Halenbeck, P. L.....St. Cloud
§Hall, W. E.....Maple Lake
†Hemstead, Werner.....Fergus Falls
§Henry, C. J.....Milaca
§Jones, R. N.....St. Cloud
§Kelly, J. F.....Cold Springs
Kettlewell, R. B.....Sauk Center
§Kohler, D. W.....St. Joseph
§Koop, S. H.....Richmond
Kuhlman, L. B.....Melrose
Lewis, C. B.....St. Cloud
§Libert, J. N.....St. Cloud
§Luckemeyer, C. J.....St. Cloud
§McDowell, J. P.....St. Cloud
§Mahowald, A.....Albany
Meyer, A. A.....Melrose
§Milhaupt, E. N.....St. Cloud
§Murphy, James E.....St. Cloud

Musachio, N. F.....Fole
Myre, C. R.....Paynesvill
§Nessa, C. B.....St. Clou
§O'Keefe, J. P.....St. Clou
O'Leary, J. H.....Fole
§Petersen, R. T.....St. Clou
§Raetz, S. J.....Maple Lak
§Richards, W. B.....St. Clou
§Reif, H. J.....St. Clou
§Sandven, N. O.....Paynesvill
§Schatz, F. J.....St. Clou
§Schmitz, E. J.....Holdingfor
Sherwood, G. E.....Kimbal
Stangl, P. E.....St. Clou
§Stenerrodden, S. C.....St. Clou
Stewart, N. E.....St. Petersburg, Fla
Veranth, L. A.....St. Clou
§Walfred, K. A.....St. Clou
§Wenner, W. T.....St. Clou
§Wetzel, E. V.....St. Clou
§Wittrock, L. H.....Watkin
Zachman, A. H.....Melros

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, January
Number of Members: 17

President
Stransky, T. W.....Owatonna

Secretary
Olson, A. J.....Owatonna

Berghs, L. V.....Owatonna
Dewey, D. H.....Owatonna

Ertel, E. O.....Ellendale
§Hartung, E. H.....Claremont
Kurtin, H. J.....Blooming Prairie
Lundquist, C. W.....Owatonna
McEnaney, C. T.....Owatonna
McIntyre, J. A.....Owatonna
Melby, Benedik.....Blooming Prairie

Moorhead, D. E.....Owatonna
§Nelson, E. J.....Owatonna
Olson, A. J.....Owatonna
Roberts, O. W.....Owatonna
Schaefer, J. F.....Owatonna
Senn, E. W.....Owatonna
Stransky, T. W.....Owatonna
§Wilkowske, R. J.....Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Koochiching,
Lake of the Woods, Morrison, Todd and Wadena Counties
Regular meetings, Spring, Summer, Fall, Winter
Annual meeting, February
Number of Members: 101

President
Garlock, D. H.....Bemidji

Secretary
Badeaux, G. I.....Brainerd

Adkins, G. H.....Pine River
§Amundson, A. E.....Little Falls
Anderson, F. C.....Little Falls
§Badeaux, G. I.....Brainerd
§Becker, S. F.....Bemidji
§Beise, R. A.....Brainerd
§Bender, J. H.....Brainerd
§Borgerson, A. H.....Long Prairie
Cardle, G. E.....Brainerd
Christie, R. L.....Long Prairie
§Closuit, F. C.....Aitken
Cook, J. M.....Staples
Coombs, C. H.....Cass Lake
†Corrigan, J. E.....Spooner
Craig, C. C.....International Falls
§Crow, E. R.....Ah-Gwah-Ching
§Dale, L. N.....Crosby
Davis, L. F.....Wadena
Davis, L. T.....Wadena
Davis, T. C.....Wadena
Davis, T. L.....Wadena
§Dewesse, W. J.....Bemidji
Dodds, W. C.....Detroit Lakes
Eiler, John.....Park Rapids
§Erickson, Alvin.....Long Prairie
Fait, R. V.....Little Falls
§Fearing, James E.....Pequot Lakes
Fine, B. A.....Crosby
§Fitzsimmons, W. E.....Brainerd
Fortier, G. M. A.....Wadena
Friefeld, Saul.....Wadena

§Garlock, A. V.....Bemidji
Garlock, D. H.....Bemidji
Gerber, M. P.....Brainerd
Ghostley, Mary C.....Puposky
†Gilmore, Rowland.....Bemidji
Grogan, J. S.....Wadena
Groschupf, T. P.....Bemidji
Grose, F. N.....Clarissa
Halladay, G. J.....Brainerd
Hanover, R. D.....Little Fork
Healy, R. T.....Pierz
Hendricks, E. J.....Verndale
Higgs, W. W.....Park Rapids
Hoganson, D. E.....Bemidji
†House, Z. E.....Cass Lake
§Houston, D. M.....Park Rapids
§Hubbard, O. E.....Brainerd
Idstrom, L. G.....Wayzata
Jamieson, E. F.....Brainerd
†Johnson, C. E.....Pine River
Johnson, D. L.....Little Falls
Johnson, E. W.....Bemidji
Kinports, E. B....International Falls
Knight, E. G.....Swanville
Krieser, A. E.....Ah-Gwah-Ching
Larson, Leroy.....Bagley
Laughlin, J. T.....Grey Eagle
§Lee, H. W.....Brainerd
Leemhuis, G. H.....Aitken
§Lenarz, A. J.....Browerville
Longfellow, Helen B.....Brainerd
Lund, W. J.....Staples
Mark, Hilbert.....Minneapolis
McCann, D. F.....Bemidji
§Mitby, I. L.....Aitkin

Monahon, R. H., Jr.....International Falls
§Mosby, M. E.....Long Prairie
§Mulligan, A. M.....Brainerd
Nelson, Bernette G.....Menahga
Nelson, Bernice A.....Northome
Nelson, N. P.....Brainerd
§Nixon, James B.....Crosby
Nolan, D. E.....Dayton, Ohio
§Parker, Warren E.....Sebeka
Petraborg, Harvey T.....Aitkin
Pierce, C. H.....Wadena
Potek, D. M.....International Falls
§Quanstrom, V. E.....Brainerd
†Ratcliffe, J. J.....Aitkin
Rice, H. G.....Aitkin
Ringle, O. F.....Walker
§Sanderson, A. G.....Deerwood
§Simons, E. J.....Swanville
§Smith, B. A.....Crosby
Stafford, C. E.....Baudette
§Stein, R. J.....Pierz
§Thabes, J. A., Sr.....Brainerd
Thabes, J. A., Jr.....Brainerd
Vandersluis, C. W.....Bemidji
§Watson, A. M.....Royalton
†Watson, J. D.....Minneapolis
Watson, P. T.....Minneapolis
§Watson, S. W.....Royalton
Whittemore, D. D.....Bemidji
§Will, C. B.....Bertha
§Will, W. W.....Bertha
§Williams, M. M.....Ah-Gwah-Ching
Wilson, V. O.....Minneapolis
Wingquist, C. G.....Crosby
Withrow, M. E...International Falls

WABASHA COUNTY MEDICAL SOCIETY

Regular meetings, Spring and Fall
Annual meeting, first Thursday after first Monday in October
Number of Members: 15

President
Bowers, R. N.....Lake City

Secretary
Wilson, W. F.....Lake City

§Bayley, E. C.....Lake City

§Bouquet, B. J.....Wabasha
§Bowers, R. N.....Lake City
Collins, J. S.....Wabasha
§Ekstrand, L. M.....Wabasha
§Ellis, E. W.....Elgin
§Flesche, B. A.....Lake City
§Gjerde, W. P.....Lake City

Glabe, R. A.....Plainview
Holt, G. W.....Hastings
§Mahle, D. G.....Plainview
§Ochsner, C. G.....Wabasha
Replogle, W. H.....Wabasha
§Wellman, T. G.....Lake City
†Wilson, W. F.....Lake City

WASECA COUNTY MEDICAL SOCIETY

Regular meetings, every six months
Annual meeting, January
Number of Members: 8

President
Hottinger, R. C. ..... Janesville

Secretary
Wadd, C. T. ..... Janesville

§Davis, R. D. ..... Waseca
§Gallagher, B. J. ..... Waseca
§Hottinger, R. C. ..... Janesville
§McIntire, H. M. ..... Waseca
§Oeljen, S. C. G. ..... Waseca
§Olds, G. H. ..... New Richland
§Swenson, O. J. ..... Waseca
§Wadd, C. T. ..... Janesville

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, Second Tuesday in each month, except June, July, August
Annual meeting, second Tuesday in December
Number of Members: 16

President
Stuhr, J. W. ..... Stillwater

Secretary
Boleyn, E. S. ..... Stillwater

Boleyn, E. S. ..... Stillwater
Burseth, E. F. ..... Forest Lake

§Carlson, R. E. ..... Stillwater
§†Haines, J. H. ..... Stillwater
Holcomb, J. T. ..... Marine-on-St. Croix
Humphrey, W. R. ..... Stillwater
§Johnson, R. G. ..... Stillwater
§Josewski, R. J. ..... Stillwater
§McCarten, F. M. ..... Stillwater
Poirier, J. A. ..... Forest Lake
Ruggles, G. M. ..... Forest Lake
§Samson, E. R. ..... Stillwater
§Sherman, C. H. ..... Bayport
§Stuhr, J. W. ..... Stillwater
Thompson, V. C. ..... Marine-on-St. Croix
Van Meier, Henry ..... Stillwater

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties
Regular meetings, March, May, September and November
Annual Meeting, September
Number of Members: 30

President
Merrill, Robert ..... Morris

Secretary
Rydburg, W. C. ..... Brooten

Arneson, A. I. ..... Morris
Behmler, F. W. ..... Morris
Bergan, Otto ..... Clinton
Bolsta, Charles ..... Ortonville
Dahle, M. B. ..... Glenwood
†Elberlin, E. A. ..... Glenwood

§Elsey, E. M. ..... Glenwood
†Elsey, J. R. ..... Glenwood
Fitzgerald, E. T. ..... Morris
§Gericke, J. T. ..... Glenwood
§Giesen, A. F. ..... Starbuck
Hedemark, H. H. ..... Ortonville
Hedemark, T. A. ..... Ortonville
§Karn, B. R. ..... Ortonville
§Karn, J. F. ..... Ortonville
Lindberg, A. L. ..... Wheaton
§†Linde, Herman ..... Cyrus
Magnuson, A. E. ..... Wheaton
McIver, B. A. ..... Lowry
§Merrill, R. W. ..... Morris
§Mooney, L. P. ..... Graceville
Muir, W. F. ..... Browns Valley
§O'Donnell, D. M. ..... Ortonville
§Oliver, I. L. ..... Graceville
Ransom, M. L. ..... Hancock
§Rossberg, Raymond A. ..... Morris
§Rydburg, W. C. ..... Brooten
§Swedenberg, Paul A. ..... Glenwood
Turbak, C. E. ..... Herman
Wagner, N. W. ..... Graceville

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, October
Annual meeting, first Monday in January
Number of Members: 33

President
Younger, L. I. ..... Winona

Secretary
Heise, Paul ..... Winona

§Benoit, F. T. ..... Winona
§Boardman, D. V. ..... Winona
§Canfield, W. W. ..... Houston
§Christensen, E. E. ..... Winona
§Hamlon, J. S. ..... St. Charles
§Heise, Herbert ..... Winona
§Heise, Paul ..... Winona

§Heise, Philip ..... Winona
§†Heise, W. F. C. ..... Winona
§Heise, W. V. ..... Winona
§Johnston, L. F. ..... Winona
Keyes, J. D. ..... Winona
§Loomis, G. L. ..... Winona
§Mattison, P. A. ..... Winona
McLaughlin, E. M. ..... Winona
§Meinert, A. E. ..... Winona
§Nauth, B. S. ..... Winona
Neumann, C. A. ..... Winona
§Page, R. L. ..... St. Charles
§†Robbins, C. P. ..... Winona
§Roemer, H. J. ..... Winona
§Rogers, C. W. ..... Winona
§Roth, F. D. ..... Lewiston
§Satterlee, H. W. ..... Lewiston
§Schaefer, Samuel ..... Winona
§Schmidt, Hilmar ..... Wilmar
§Steiner, I. W. ..... Winona
§†Tweedy, G. J. ..... Winona
Tweedy, J. A. ..... Winona
§Tweedy, R. B. ..... Winona
§Vollmer, F. J. ..... Winona
§Wilson, R. H. ..... Winona
§Younger, L. I. ..... Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, October
Number of Members: 18

President
Roholt, H. B. ..... Waverly

Secretary
Catlin, J. J. ..... Buffalo

§Anderson, W. P. ..... Buffalo
§Bendix, L. M. ..... Annandale

§Catlin, J. J. ..... Buffalo
§Catlin, T. J. ..... Buffalo
§Ellison, F. E. ..... Monticello
§Greenfield, W. T. ..... Delano
Grundset, O. J. ..... Montrose
Guilfoile, P. J. ..... Delano
Harriman, Leonard ..... Howard Lake
§Hart, W. E. ..... Monticello
Peterson, O. L. ..... Cokato
Raetz, S. J. ..... Maple Lake
§Ridgway, A. M. ..... Annandale
§Roholt, C. L. ..... Waverly
Roholt, H. B. ..... Waverly
Swezey, B. F. ..... Buffalo
§Thielen, R. D. ..... St. Michael
§Thompson, Arthur ..... Cokato

Alphabetic Roster

Key to Symbols: *Deceased; †Affiliate, Associate or Life Member; ‡In Service;

Aagaard, G. N., Jr.....Minneapolis
Aanes, A. M.....Red Wing
Aborn, W. H.....Hawley
Abraham, A. L.....Duluth
Abramson, Milton.....Minneapolis
Ackerman, R. F.....Rochester
Adair, A. F., Jr.....St. Paul
Adams, B. S.....Hibbing
Adams, R. C.....Bird Island
Adams, Richard C.....Rochester
Addy, E. R.....Gilbert
Adkins, C. D.....Minneapolis
Adkins, C. M.....Thief River Falls
Adkins, G. H.....Pine River
Adler, B. C.....St. Paul
Adson, A. W.....Rochester
Affeldt, D. E.....Kasson
Ahern, E. E.....Minneapolis
Ahern, Gerald S.....Rochester
Ahlfs, J. J.....Caledonia
Ahrens, A. E.....St. Paul
Ahrens, A. H.....St. Paul
†Aitkins, H. B.....LeCenter
Akester, Ward.....Fergus Falls
Akins, W. M.....Red Wing
Albrecht, H. H.....Chisago City
*Alden, John F.....St. Paul
Alden, John F., Jr.....St. Paul
Aldrich, C. A.....Rochester
Alexander, H. A.....Minneapolis
Alger, E. W.....Minneapolis
Aling, C. A.....Minneapolis
*†Aling, Chas. P.....Minneapolis
Allen, C. S.....Rochester
Allen, E. V. N.....Rochester
Allen, H. B.....Austin
Allen, Horace E.....Rochester
Altman, Richard F.....Minneapolis
Altnow, H. O.....Minneapolis
Alvarez, W. C.....Rochester
Amberg, Samuel.....Rochester
Amundsen, A. E.....Little Falls
*Andersen, A. G.....Minneapolis
Andersen, H. A.....Rochester
Andersen, S. C.....Minneapolis
Anderson, C. A.....Winsted
Anderson, C. D.....Chicago, Ill.
Anderson, C. L.....Ely
Anderson, D. D.....Minneapolis
Anderson, Donald.....Lamberton
Anderson, D. P., Jr.....Austin
Anderson, E. D.....Minneapolis
Anderson, E. R.....Minneapolis
Anderson, F. C.....Little Falls
Anderson, F. J.....Minneapolis
Anderson, H. R.....Rochester
Anderson, J. K.....Minneapolis
Anderson, J. R.....Rochester
Anderson, K. W.....Minneapolis
Anderson, M. C.....Minneapolis
Anderson, M. E., Jr.....Rochester
Anderson, M. J.....Rochester
Anderson, M. W.....Rochester
Anderson, O. W.....Luverne
Anderson, R. E.....Willmar
Anderson, R. E.....Rochester
Anderson, S. H.....Red Wing
Anderson, U. S.....Minneapolis
Anderson, W. P.....Buffalo
Anderson, W. E.....Clearbrook
Anderson, W. T.....Minneapolis
Andreassen, E. C.....Minneapolis
Andrejek, A. R.....Madison
Andresen, K. D.....Minneapolis
Andrews, R. N.....Mankato
Andrews, R. S.....Minneapolis
Arends, A. L.....Moose Lake
Arey, S. L.....Minneapolis
†Arhelger, Stuart.....Freeborn
Arko, J. L.....Hibbing
Arlander, C. E.....Minneapolis
Arling, L. S.....Minneapolis
Arling, P. A.....Rochester
Armstrong, E. L.....Duluth
Armstrong, R. S.....Winnebago
Arndt, H. W.....Detroit Lakes
Arneson, A. I.....Morris
Arneson, J. F.....Rochester
Arnold, Anna W.....Minneapolis
Arnold, D. C.....Minneapolis
Arnold, E. W.....Adrian
Arnquist, A. S.....St. Paul
Arnson, J. M.....Benson
Arny, F. P.....St. Paul
Arvidson, C. G.....Minneapolis
Arzt, P. K.....St. Paul
‡Ashburn, F. S.....Rochester
Ashley, W. F.....Rochester
Athens, A. G.....Duluth
Aune, Martin.....Minneapolis
†Aurand, W. H.....Minneapolis
Aurelius, J. R.....St. Paul
Ausman, C. F.....St. Paul
Avrick, Alan M.....Onamia
*†Ayres, G. T.....Ely

Babb, F. S.....St. Paul
Bachnik, F. W.....Hibbing
Backus, R. W.....Nopeming
Bacon, D. K.....St. Paul
†Bacon, L. C.....St. Paul
Badby, G. W.....Cannon Falls
Badeaux, G. I.....Brainerd
Baggenstoss, A. H.....Rochester
Bagley, C. M.....Duluth
Bagley, Elizabeth C.....Duluth
Bagley, W. R.....Duluth
Baich, V. M.....Bovey
Bailey, Allen A.....Rochester
Bailey, J. A.....Rochester
Bailey, J. H.....Rochester
Bailey, R. B.....Fairmont
Bair, H. L.....Rochester
Baird, J. W.....Minneapolis
Baken, M. P.....Minneapolis
Baker, A. B.....Minneapolis
Baker, A. C.....Fergus Falls
Baker, A. T.....Minneapolis
Baker, C. E.....Fergus Falls
Baker, E. L.....Minneapolis
Baker, G. S.....Rochester
Baker, H. R.....Hayfield
Baker, Jeannette L.....Fergus Falls
†Baker, Looe.....Minneapolis
Baker, N. H.....Fergus Falls
Baker, R. L.....Hayfield
Bakkila, H. E.....Duluth
Balcome, M. M.....St. Paul
Balfour, D. C.....Rochester
Balfour, D. C., Jr.....Rochester
Balfour, W. M.....Rochester
Balkin, S. G.....Minneapolis
Balmer, A. I.....Pipestone
Bank, H. E.....Portland, Oregon
Banner, Edw. A.....Rochester
Barber, J. P.....Minneapolis
Barber, T. E.....Austin
Bardon, Richard.....Duluth
Bargen, I. A.....Rochester
Barger, J. D.....Rochester
Barker, J. D.....Duluth
Barker, N. W.....Rochester
Barnes, A. R.....Rochester
Barnes, B. C.....Rochester
Barnett, J. M.....St. Paul
Barney, L. A.....Duluth
Barr, L. C.....Albert Lea
Barr, M. M.....Rochester
Barr, R. N.....St. Paul
Barr, W. H.....Wells
Barrett, E. E.....Duluth
Barron, Moses.....Minneapolis
Barry, L. W.....St. Paul
Barsness, Nellie O. N.....St. Paul
Barton, J. C.....St. Paul
Basinger, H. P.....Windom
Basinger, H. R.....Mountain Lake
Batdorf, B. N.....Good Thunder
Bateman, J. G.....Rochester
Bateman, O. A. L.....Rochester
Bauer, E. L.....Rochester
Baumgartner, F. H.....Albany
Baxter, S. H.....Minneapolis
Bayard, H. F.....Minneapolis
Bayley, E. C.....Lake City
Bayrd, E. D.....Rochester
Beach, Northrup.....Minneapolis
Beahrs, O. H.....Rochester
†Beals, Hugh.....St. Paul
†Beard, A. H.....Minneapolis
‡Bearzy, H. J.....Rochester
Bechtel, M. J.....Warren
Beck, N. R.....Salt Lake City, Utah
Becker, F. T.....Duluth
Becker, S. F.....Bemidji
Beckering, Gerrit.....Edgerton
†Beckman, W. G., Palo Alto, California
Bedford, E. W.....Minneapolis
Beech, R. H.....St. Paul
Beek, H. O.....St. Paul
Beeler, J. W.....Rochester
Beer, J. J.....St. Paul
Behmler, F. W.....Morris
Behr, O. K.....Crookston
Beise, R. A.....Brainerd
Beiswanger, R. H.....Minneapolis
Bell, C. C.....St. Paul
†Bell, E. T.....Minneapolis
Bellville, T. P.....Minneapolis
Belote, G. B.....Caledonia
Belshe, J. C.....Northfield
Belzer, M. S.....Minneapolis
Bender, J. H.....Brainerd
Bendix, L. H.....Annandale
Benedict, W. L.....Rochester
Benepe, J. L.....St. Paul
Benesh, L. A.....Minneapolis
*Benesh, N. G.....Minneapolis
Benjamin, A. E.....Minneapolis
Benjamin, E. G.....Minneapolis
Benjamin, H. G.....Minneapolis
Benjamin, W. G.....Pipestone
Benn, F. G.....Minneapolis
Bennett, J. K.....Rochester
Bennett, W. A.....Rochester
Benoit, F. T.....Winona
Bentley, N. P.....St. Paul
Bentson, J. A.....Rochester
Bepko, Marie K.....Cloquet
Berdez, G. L.....Duluth
Bergan, Otto.....Clinton
Bergan, R. O.....Duluth
Berge, D. O.....Roseau
Berger, A. G.....Minneapolis
Bergh, G. S.....Minneapolis
Bergh, L. N.....Montevideo
Bergh, Solveig, M.....Minneapolis
Berghs, L. V.....Owatonna
Bergman, O. B.....St. James
Bergquist, K. E.....Battle Lake
Berkman, D. M.....Rochester
Berkman, D. S.....Rochester
Berkman, J. M.....Rochester
Berkwitz, N. J.....Minneapolis
Berlin, A. S.....Hallock
Berman, Reuben.....Minneapolis
Bernstein, W. C.....St. Paul
†Bertelson, Oskar L.....Crookston
Bessesen, A. N., Jr.....Minneapolis
Bessessen, D. H.....Minneapolis
Bessessen, W. A.....Minneapolis
Beuning, J. B.....St. Cloud
Bianco, A. J.....Duluth
Bicek, J. F.....St. Paul
Bickel, W. H.....Rochester
Biedermann, Jacob..Thief River Fallls
Bieter, R. N.....Minneapolis
Bigelow, C. E.....Dodge Center
Bigler, I. E.....Perham
Bilka, P. J.....Rochester
Billings, R. E.....Franklin
†Binet, H. E.....Grand Rapids
Binger, H. E.....St. Paul
Biorn, C. L.....Rochester
Black, B. M.....Rochester
Black, E. J.....St. Paul
Black, W. A.....New Ulm
Blackburn, C. M.....Rochester
Blackmore, S. C.....Biwabik
Blake, A. J.....Hopkins
Blake, James.....Hopkins
Blake, James A.....Hopkins
†Blake, P. S.....Minneapolis
Blakey, A. R.....Osakis
Bloedel, T. J. G.....Osseo
Bloemendaal, E. J. G.....Lake Park
Blomberg, W. R.....Princeton
Blumenthal, J. S.....Minneapolis
Blunt, C. P., III.....Rochester
Boardman, D. V.....Winona
Bock, R. A.....St. Paul
Bockman, M. W. H.....Minneapolis
Bodaski, A. A.....Le Center
Boeckmann, Egil.....St. Paul
Boehrer, J. J., Jr.....Minneapolis
Bofenkamp, F. W.....Luverne
Boies, L. R.....Minneapolis
Bolender, H. L.....St. Paul
Boleyn, E. S.....Stillwater
Boline, C. A.....Battle Lake
†Bolsta, Charles.....Ortonville
Bolz, J. A.....Grand Rapids

Boman, P. G. ..... Duluth
Boody, G. J., Jr. ..... Dawson
†Booth, A. E. ..... Minneapolis
Boothby, W. M. ..... Rochester
Boreen, C. A. ..... Minneapolis
Booren, J. C. ..... Duluth
Borg, J. F. ..... St. Paul
Borgerson, A. H. ..... Long Prairie
Borgeson, E. J. ..... Minneapolis
Borman, C. N. ..... Minneapolis
Borowicz, L. A. ..... New York
Bosland, H. G. ..... Willmar
Bossert, C. S. ..... Mora
Botha, E. K. ..... Rochester
Bottolfson, B. T. ..... Moorhead
Bouma, L. R. ..... St. Paul
Bouquet, B. J. ..... Wabasha
Bourget, G. E. ..... Detroit Lakes
Bowen, R. L. ..... Hibbing
Bowers, G. G. ..... Minneapolis
Bowers, R. N. ..... Lake City
Bowing, H. H. ..... Rochester
Boyd, L. M. ..... Alexandria
Boyer, S. H. ..... Duluth
Boyer, S. H., Jr. ..... Duluth
Boylan, R. N. ..... Rochester
Boynton, Bruce ..... Ada
Boynton, Ruth E. ..... Minneapolis
Boysen, Herbert ..... Madelia
Braasch, W. F. ..... Rochester
Braastad, F. W. ..... Rochester
Brady, J. A. ..... Rochester
Brand, G. D. ..... St. Paul
Brand, W. A. ..... Redwood Falls
Brandes, R. W. ..... Rochester
Branham, D. S. ..... Albert Lea
Branton, A. F. ..... Chattanooga 3, Tenn.
Branton, B. J. ..... Willmar
Bratholdt, J. W. ..... Watertown
Bratrud, A. F. ..... Minneapolis
Bratrud, Edward ..... Thief River Falls
Bratrud, T. E. ..... Thief River Falls
Bratrude, E. J. ..... St. James
Braun, O. C. ..... Nashwauk
Bray, E. R. ..... St. Paul
Bray, P. N. ..... Duluth
Bray, R. B. ..... Biwabik
Bregel, F. L. ..... St. James
Brekke, H. J. ..... Minneapolis
Briggs, J. F. ..... St. Paul
Brigham, C. F. ..... St. Cloud
Brilhart, K. B. ..... Rochester
Brill, Alice K. ..... Minneapolis
Brink, A. A. ..... Baudette
Brink, D. M. ..... Hutchinson
Broadie, T. E. ..... St. Paul
Broders, A. C. ..... Rochester
Brodie, W. D. ..... St. Paul
Brooker, W. J. ..... Duluth
Brooks, C. N. ..... Minneapolis
Brooks, L. M. ..... Rochester
Brooksby, W. A. ..... Rochester
Brown, A. E. ..... Rochester
†Brown, A. H. ..... Pipestone
†Brown, E. D. ..... Paynesville
Brown, F. J. ..... Minneapolis
Brown, G. E., Jr. ..... Rochester
Brown, H. A. ..... Rochester
Brown, H. S. ..... Rochester
Brown, J. C. ..... St. Paul
Brown, J. R. ..... Minneapolis
Brown, L. L. ..... Crookston
Brown, P. W. ..... Rochester
†Brown, S. P. ..... Minneapolis
Brown, W. D. ..... Minneapolis
Browning, W. H. ..... Rochester
Brownson, B. C. ..... Rochester
Brunsting, L. A. ..... Rochester
Brusegaard, J. F. ..... Red Wing
Brutsch, G. C. ..... Minneapolis
Bryan, A. L. ..... San Diego, Calif.
Buchstein, H. F. ..... Minneapolis
Buck, F. H. ..... Shakopee
Buckley, R. P. ..... Duluth
Buie, Louis A. ..... Rochester
Buirge, R. E. ..... Minneapolis
Bulinski, T. J. ..... St. Paul
Bulkley, Kenneth ..... Minneapolis
Bunker, B. W. ..... Anoka
Burch, E. P. ..... St. Paul
Burch, F. E. ..... St. Paul
Burchell, H. B. ..... Rochester
Burleigh, J. S. ..... Luverne
Burlingame, D. A. ..... St. Paul
Burmeister, R. O. ..... Welcome
Burnap, W. L. ..... Fergus Falls
Burnham, W. H. ..... Minneapolis
Burns, C. ..... Duluth
Burns, F. M. ..... Milan
Burns, H. A. ..... Anoka
Burns, M. A. ..... Milan
Burns, R. M. ..... St. Paul
Burseth, E. C. ..... Forest Lake
Burton, C. G. ..... St. Paul
Buscher, J. C. ..... St. Cloud
Bush, R. P. ..... Rochester
Bushard, W. J. ..... Minneapolis
Busher, H. H. ..... St. Paul
Butler, D. B. ..... Rochester
Butler, J. K. ..... Carlton
Butt, H. R. ..... Rochester
Butturff, C. R. ..... Freeborn
Butzer, J. A. ..... Mankato
Buzzelle, L. K. ..... Minneapolis

Cable, M. L. ..... Minneapolis
Cabot, C. M. ..... Minneapolis
Cabot, V. S. ..... Minneapolis
Cady, L. H. ..... Minneapolis
Cain, C. L. ..... St. Paul
Cain, J. C. ..... Rochester
Cain, J. H. ..... Hoffman
Cairns, R. J. ..... Redwood Falls
Calhoun, F. W. ..... Albert Lea
Callaghan, M. F. ..... Canada
Callahan, F. F. ..... St. Paul
Callerstrom, G. W. ..... Minneapolis
Cameron, Isabell L. ..... Minneapolis
Cameron, J. H. ..... Crookston
Cameron, J. M. ..... Rochester
Camp, J. D. ..... Rochester
Camp, W. E. ..... Minneapolis
Campbell, D. C. ..... Rochester
Campbell, L. M. ..... Minneapolis
Campbell, O. J. ..... Minneapolis
Canfield, Albert ..... Thief River Falls
Canfield, W. W. ..... Winona
Cantwell, W. F. ..... International Falls
Cardle, A. E. ..... Minneapolis
Cardle, G. E. ..... Brainerd
Carey, J. B. ..... Minneapolis
Carlander, L. W., Jr. ..... Rochester
Carley, W. A. ..... St. Paul
Carlson, A. E. ..... Warren
Carlson, C. E. ..... Alexandria
Carlson, J. V. ..... Westbrook
Carlson, Lawrence ..... Minneapolis
Carlson, L. T. ..... Minneapolis
Carlson, N. C. ..... Watertown
Carlson, R. E. ..... Stillwater
Carman, J. E. ..... Detroit Lakes
Carmona, M. G. ..... Rochester
Caron, R. P. ..... Minneapolis
Carpenter, R. E. ..... Rochester
Carr, D. T. ..... Rochester
Carroll, W. C. ..... St. Paul
Carryer, H. M. ..... Rochester
Carter, H. G. ..... Minneapolis
Carter, J. W., Jr. ..... Rochester
*Carstens, C. F. ..... Hibbing
Caspers, C. G. ..... Minneapolis
Catlin, I. J. ..... Buffalo
Catlin, T. J. ..... Buffalo
Cavanor, F. T. ..... Minneapolis
Ceder, E. T. ..... Minneapolis
Ceplecha, S. F. ..... Redwood Falls
Cervenka, C. F. ..... New Prague
Chadbourn, C. R. ..... St. Paul
Challman, S. A. ..... Minneapolis
Chambers, W. C. ..... Blue Earth
Chapman, C. B. ..... Minneapolis
Chapman, C. E. ..... Rochester
Chapman, J. P., Jr. ..... Rochester
Chapman, T. L. ..... Duluth
Chatterton, C. C. ..... St. Paul
Chermak, F. G. ..... International Falls
Chesley, A. J. ..... Minneapolis
Childs, D. S., Jr. ..... Rochester
Chisholm, T. C. ..... Minneapolis
Chlad, A. J. ..... St. Paul
Christensen, C. H. ..... Duluth
Christensen, E. E. ..... Winona
Christensen, N. A. ..... Rochester
Christenson, G. R. ..... Minneapolis
Christiansen, Andrew ..... St. Paul
Christiansen, H. A. ..... Jackson
Christianson, H. W. ..... Minneapolis
Christie, R. L. ..... Long Prairie
Christoferson, Lee A. ..... Rochester
Chunn, S. S. ..... Pipestone
Clagett, O. T. ..... Rochester
Clark, F. H. ..... Rochester
Clark, H. B. ..... St. Cloud
Clark, H. B., Jr. ..... St. Paul
Clark, I. T. ..... Duluth
Clark, L. W. ..... Spring Valley
Clarke, E. K. ..... Minneapolis
Clarke, E. T. ..... Buhl
Clarkson, Wm. R. ..... Rochester
Clay, L. B. ..... Minneapolis
Claydon, H. F. ..... Red Wing
†Claydon, L. E. ..... Red Wing
Cleaves, W. D. ..... Sauk Centre
Clifford, G. W. ..... Alexandria
Clifton, T. A. ..... Chatfield
Closuit, F. C. ..... Aitkin
Clothier, E. F. ..... Elk River
Cluxton, H. E., Jr. .. Hot Springs, Ark.
Cochrane, B. B. ..... St. Paul
Cochrane, R. F. ..... Minneapolis
Coddon, W. D. ..... St. Paul
Cohen, B. A. ..... Minneapolis
Cohen, S. S. ..... Minneapolis
Colby, W. L. ..... St. Paul
Cole, Frank ..... Duluth
Cole, W. H. ..... St. Paul
Coll, J. J. ..... Duluth
Collet, R. W. ..... Rochester
†Collie, H. G. ..... St. Paul
Collins, A. N. ..... Duluth
†Collins, H. C. ..... Duluth
Collins, J. S. ..... Wabasha
Colp, E. A. ..... Minneapolis
*Colvin, A. R. ..... St. Paul
Combacker, L. C. ..... Fergus Falls
Comfort, M. W. ..... Rochester
Condit, W. H. ..... Minneapolis
Conley, F. W. ..... Rochester
*Conner, H. M. ..... Rochester
Connery, D. B. ..... Rochester
Connolly, C. J. ..... St. Paul
Connor, C. E. ..... St. Paul
Conway, J. E. ..... St. Cloud
Cook, C. K. ..... St. Paul
Cook, E. N. ..... Rochester
Cook, J. M. ..... Staples
Coombs, C. H. ..... Cass Lake
Cooper, C. C. ..... St. Paul
Cooper, J. P. ..... Excelsior
Cooper, M. D. ..... Winnebago
Cooper, Talbert ..... Rochester
Corbett, J. F. ..... Minneapolis
Corbin, K. B. ..... Rochester
Corcoran, C. E., Jr. ..... Rochester
Cornica, A. D. ..... Minneapolis
Correa, D. H. ..... Minneapolis
†Corrigan, J. E. ..... Spooner
Cosgriff, J. A. ..... Olivia
Coulter, H. E. ..... Madelia
Counseller, V. S. ..... Rochester
Countryman, R. S. ..... St. Paul
Covell, W. W. ..... St. Peter
Coventry, M. B. ..... Rochester
Coventry, W. A. ..... Duluth
Coventry, W. D. ..... Duluth
Covey, K. W. ..... Mahnomen
Cowan, D. W. ..... Minneapolis
†Cowern, E. W. ..... No. St. Paul
Crabtree, J. C. ..... Princeton
Craig, C. C. ..... International Falls
Craig, D. M. ..... St. Paul
Craig, W. McK. ..... Rochester
Cranmer, R. R. ..... Minneapolis
†Cranston, R. W. ..... Minneapolis
Creevy, C. D. ..... Minneapolis
Creighton, R. H. ..... Minneapolis
*Crewe, J. E. ..... Rochester
Critchfield, L. R. ..... St. Paul
Cramer, H. E., Jr. ..... Rochester
Crombie, F. J. ..... No. St. Paul
Cronkite, A. E. ..... Rochester
Cronwell, B. J. ..... Austin
Crow, E. R. ..... Ah-Gwah-Ching
Crowley, D. F., Jr. ..... Rochester
Crowley, J. H. ..... St. Paul
Crump, J. W. ..... St. Paul
Culligan, J. M. ..... St. Paul
Culligan, L. C. ..... Minneapolis
Culmer, C. U. ..... Minneapolis
Culver, L. G. ..... St. Paul
Cumming, H. A. ..... Minneapolis
Cunningham, C. B. ..... Virginia
Curtis, R. A. ..... LeCenter
Cutts, George ..... Minneapolis

Dack, L. G. ..... St. Paul
Dady, E. E. ..... Minneapolis
Dahl, E. O. ..... Minneapolis
†Dahl, G. A. ..... Mankato
Dahl, J. A. ..... Minneapolis
Dahle, M. B. ..... Glenwood
Dahlin, D. C. ..... Rochester
Dahlin, I. T. ..... Aurora
Daignault, Oscar ..... Benson
Dale, L. N. ..... Crosby
Danford, K. A. ..... Mahnomen
Daniel, D. H. ..... Minneapolis
Daniels, B. T. ..... Rochester
Danielson, K. A. ..... Litchfield
Danielson, Lennox ..... Litchfield
Dargay, C. P. ..... Minneapolis
†Daugherty, E. B. .. Marine-on-St. Croix
Daugherty, G. W. ..... Rochester
Daut, R. V. ..... Rochester
Davis, A. C. ..... Rochester
Davis, E. V. ..... St. Paul
Davis, G. D. ..... Rochester
Davis, I. G. ..... Rushford
Davis, J. C. ..... Minneapolis
Davis, L. T. ..... Wadena
Davis, L. F. ..... Wadena
Davis, T. C. ..... Wadena
Davis, R. D. ..... Waseca
‡Davis, R. M. ..... Indiana
Davis, T. L. ..... Wadena

Davis, W. I. .....Mound
Day, Lois A.....Rochester
Dearing, W. H., Jr.....Rochester
DeBoer, Hermanus.....Edgerton
Decker, C. H.....St. Paul
Dederick, G. F., Jr.....Rochester
Dedolph, Karl.....St. Paul
†Dedolph, T. H.....Minneapolis
‡DeForest, R. E.....Rochester
DeLamater, E. D.....Rochester
Delmore, J. L., Jr.....Roseau
Delmore, J. L.....Roseau
Delmore, R. J.....Roseau
del Plaine, C. W.....Minneapolis
Demo, R. A.....Albert Lea
Denman, A. V.....Mankato
Dennis, Clarence.....Minneapolis
Derauf, B. I.....St. Paul
Derifield, R. S.....Hibbing
Desjardins, A. U.....Rochester
Deterling, R. A., Jr.....New York
Deters, D. C.....St. Paul
Devereaux, T. J.....Wayzata
Devine, K. D. .....Rochester
Devney, J. W. .....Rochester
DeVoe, R. W.....Rochester
DeWeerd, J. H., Jr. .....Rochester
Deweese, W. J.....Bemidji
Dewey, D. H.....Owatonna
Dickson, F. H., Jr. .....Proctor
Dickson, T. H.....St. Paul
Diehl, H. S.....Minneapolis
Diessner, G. R. .....Rochester
Diessner, H. D. .....Minneapolis
Dille, D. E. .....Litchfield
Dittrich, R. J.....Duluth
Dixon, C. F.....Rochester
Dockerty, M. B.....Rochester
Dodds, Wm. C.....Detroit Lakes
Doehring, P. C., Jr.....Vallejo, Calif.
Doherty, E. M. .....New Prague
Dolder, F. C.....Eyota
Doman, V. W.....Lakefield
Domeier, L. H.....New Ulm
Doms, H. C. A.....Slayton
Donaldson, C. S.....Foley
Donoghue, F. E.....Brooklyn, N. Y.
Donohue, P. F.....St. Paul
Donovan, D. L.....Albert Lea
Doolittle, L. E.....Duluth
Dordal, J.....Sacred Heart
Dorge, R. I.....Minneapolis
Dornberger, G. R. .....Rochester
Dornblaser, H. B.....Minneapolis
Dorsey, G. C.....Minneapolis
Douglas, J. M. .....Rochester
Douglass, B. E.....Rochester
Dovre, C. M.....St. Paul
Dowidat, R. W.....Minneapolis
Doswell, W. J.....Kerkhoven
Doxey, G. L.....Minneapolis
Doyle, G. C.....Duluth
Doyle, L. O.....Minneapolis
Drake, C. B.....St. Paul
Drake, C. R.....Minneapolis
†Drake, F. A.....Lanesboro
Dredge, H. P.....Sandstone
Drexler, G. W. .....Blue Earth
Drill, H. E.....Hopkins
Drips, Della G. .....Rochester
Drumheller, J. J.....New York
Dry, T. J.....Rochester
Dubbe, F. H.....New Ulm
DuBois, J. F.....Sauk Centre
Duff, E. R.....Minneapolis
Duggan, A. D.....Rochester
Dukelow, D. A.....Minneapolis
†Dumas, A. G.....Minneapolis
Duncan, J. W.....Moorhead
Dungay, N. S.....Northfield
Dunlap, E. H.....Minneapolis
Dunn, G. R.....Minneapolis
Dunn, J. H. .....Rochester
Dunn, J. N.....St. Paul
DuPont, J. A.....Excelsior
Duryea, W. M.....Minneapolis
Du Shane, J. W.....Rochester
†Dutton, C. E.....Minneapolis
Dvorak, B. A.....Minneapolis
Dwan, P. F.....Minneapolis
Dwinnell, L. A.....Fergus Falls
Dworsky, S. D.....Minneapolis
Dysterheft, A. F.....Gaylord

Earl, G. A. .....St. Paul
Earl, J. R.....St. Paul
Earl, Robert .....St. Paul
Earnest, Franklin, III.....Rochester
Eaton, L. M.....Rochester
Eberley, T. S. .....Benson
†Eberlin, E. A.....Glenwood
Ebert, R. V. .....Minneapolis
Eckdale, J. E. .....Marshall
Eckles, N.....Minneapolis
Eckman, P. F.....Duluth
Eckman, R. J.....Duluth
Eckstam, E. E. .....Rochester
Edlund, Gustaf.....St. Paul
Edwards, Jessie E. .....Rochester
Edwards, J. W.....St. Paul
Edwards, L. G.....St. Paul
†Edwards, R. T.....Big Fork, Mont.
Edwards, T. J. .....St. Paul
Eginton, C. T.....St. Paul
Ehrenberg, C. J.....Minneapolis
Ehrlich, S. P.....Minneapolis
Eich, Matthew.....Minneapolis
Eiler, John.....Park Rapids
Eisenman, Walter.....Coleraine
Eisenstadt, D. H.....Minneapolis
Eisenstadt, W. S.....Minneapolis
Eitel, G. D.....Minneapolis
Ekblad, J. W.....Duluth
Ekstrand, L. M. .....Wabasha
Elias, F. J.....Duluth
Elkins, E. C.....Rochester
Ellingson, A. R.....Detroit Lakes
Ellingson, E. A.....Rochester
Elliott, J. A., Jr.....Rochester
Elliott, R. B.....Oskaloosa, Iowa
Ellis, E. W.....Elgin
Ellis, F. Henry.....New York
Ellison, D. E.....Minneapolis
Ellison, F. E.....Monticello
Elsey, E. M.....Glenwood
†Elsey, J. R.....Glenwood
Ely, O. S.....So. St. Paul
Emanuel, K. W.....Duluth
Emerson, E. C.....St. Paul
Emerson, E. E. .....Osakis
Emmett, J. L.....Rochester
Endress, E. K.....St. Paul
Engberg, E. J.....Faribault
Engelhart, P. C.....Minneapolis
Englund, E. F. .....Minneapolis
Engstrand, O. J.....Minneapolis
Engstrom, G. F.....Belgrade
Enroth, O. E. .....St. Paul
Eppard, R. M.....Cloquet
Erb, H. R.....Rochester
Erich, J. B.....Rochester
Erickson, A. O.....Long Prairie
Erickson, C. O. .....Minneapolis
Erickson, D. J.....Rochester
Erickson, Eskil.....Halstad
Erickson, R. E.....Hector
Erickson, R. F.....Minneapolis
Ericson, R. M.....Minneapolis
Ericson, Swan.....Le Sueur
Ernest, G. C. H.....So. St. Paul
Ersfeld, M. P. .....St. Paul
Erskine, G. M.....Grand Rapids
Ertel, E. O.....Ellendale
†Eshelby, E. C. .....St. Paul
Esser, John.....Perham
Esser, O. J. .....New Ulm
Estes, J. E.....Rochester
Estrem, C. O.....Fergus Falls
Estrem, R. D.....Fergus Falls
Estrem, R. L.....Fergus Falls
Estrem, T. A.....Hibbing
Eusterman, G. B. .....Rochester
Eustermann, J. J.....Mankato
Evans, E. T.....Minneapolis
Evans, L. M.....Sauk Rapids
Evans, R. D.....Minneapolis
†Evarts, A. B.....Rochester
Evert, J. A. .....St. Paul
Ewens, H. B.....Virginia

Faber, J. E.....Rochester
Faber, W. M.....Rochester
†Fahey, E. W.....St. Paul
Fahr, G. F.....Minneapolis
Fait, R. V.....Little Falls
Fansler, W. A.....Minneapolis
Farber, E. M.....Rochester
Farkas, J. V.....St. Paul
†Farrish, R. C.....Sherburn
†Farsht, I. J.....Los Angeles, Calif.
Faulconer, Albert, Jr. ....Rochester
Fawcett, A. M.....Renville
Fawcett, K. R.....Duluth
Fawcett, R. M.....Rochester
Fearing, J. E.....Pequot Lakes
Feeney, J. M.....Minneapolis
Feinstein, J. Y.....Minneapolis
Feldman, F. M.....Rochester
Felion, A. J.....Two Harbors, Minn.
Fellows, M. F.....Duluth
Fenger, E. P. K.....Oak Terrace
Ferguson, J. C.....St. Paul
Ferguson, W. C.....Walnut Grove
Ferguson, W. J.....Rochester
Ferrell, C. R.....Grand Rapids
Ferris, D. O.....Rochester
‡Ferris, H. A., Jr.....Rochester
Fensenmaier, O. B.....New Ulm
Fesler, H. H.....St. Paul
*Fetterly, Warren.....Minneapolis
Figi, F. A.....Rochester
Fine, B. A.....Crosby
Fink, D. L. .....St. Paul
Fink, L. W.....Minneapolis
Fink, W. H.....Minneapolis
Fisch, H. M.....Austin
Fischer, M. McC.....Duluth
Fisher, Dan W.....St. Paul
Fisher, Isadore .....St. Paul
Fisher, J. M.....Willmar
Fisher, R. G.....Rochester
Fisher, R. L.....Pomona, Calif.
Fisketti, Henry.....Duluth
†Fitzgerald, D. F.....Minneapolis
Fitzgerald, E. T.....Morris
Fitzgibbons, R. J.....Nebr.
Fitzsimons, W. E.....Brainerd
Fjeldstad, C. A.....Minneapolis
Flanagan, H. F.....St. Paul
Flanagan, L. G.....Austin
Flannery, Hubert F.....St. Paul
Flashman, F. L.....Rochester
Flautt, J. R., Jr.....Rochester
Fleeson, W. H. .....Minneapolis
Fleming, A. S.....Minneapolis
Fleming, D. S.....Minneapolis
Fleming, T. N.....St. Cloud
Flesche, B. A.....Lake City
Flink, E. B.....St. Paul
Flinn, T. E.....Redwood Falls
Flom, M. G.....Zumbrota
Flynn, B. F. .....Hibbing
Fogarty, C. W., Jr.....St. Paul
Fogarty, C. W.....St. Paul
Fogelberg, E. J. .....St. Paul
Foker, L. W.....Minneapolis
Foley, F. E. B.....St. Paul
Folken, F. G.....Albert Lea
Folsom, L. B.....Minneapolis
Ford, B. C.....Marshall
Ford, John L.....Rochester
Ford, W. H.....Minneapolis
Forney, R. A.....Rochester
Forsythe, J. R.....St. Paul
Fortier, G. M. A.....Little Falls
Foss, E. L.....Rochester
Foster, Orley W.....Minneapolis
Foster, W. K.....Minneapolis
Fowler, L. H.....Minneapolis
Fox, James R.....Minneapolis
Franchere, F. W.....Lake Crystal
Francis, D. W.....Morristown
Frane, D. B.....Minneapolis
Frank, J. E.....Marshall
Frank, W. L.....Jacksonville, Illinois
Fraser, Frank A.....Thief River Falls
Frear, Rosemary R. ....Minneapolis
Fredericks, G. M.....Minneapolis
Frederickson, Alice C.....Willmar
Frederickson, G. U. Y.....Willmar
Fredlund, M. L.....Minneapolis
Fredricks, M. G. .....Duluth
Freedland, Morris.....Fosston
Freeman, C. D.....St. Paul
Freeman, G. H.....St. Peter
Freidman, L. L.....St. Paul
Freligh, W. P.....Albert Lea
French, L. A.....Minneapolis
Fricke, R. E.....Rochester
Fricke, R. W.....Rochester
Fried, L. A.....Minneapolis
Friedell, Aaron .....Minneapolis
Friedell, George.....Ivanhoe
Friefeld, Saul .....Wadena
Friesleben, William.....Sauk Rapids
Frisch, F. P.....Willmar
Fritsche, Albert.....New Ulm
Fritsche, C. J.....New Ulm
Fritsche, T. R.....New Ulm
Fritz, W. L.....St. Paul
Froats, C. W.....St. Paul
Frost, E. H.....Willmar
Frost, J. B.....Minneapolis
Frost, R. H. .....St. Paul
Frykman, H. M. .....Minneapolis
Fugina, G. R.....Mankato
Fuller, Alice H.....Minneapolis
Funk, V. K.....Oak Terrace

*Gaarde, F. W., Sr.....Rochester
Gaarde, F. W., Jr.....Rochester
Gaida, J. B.....St. Cloud
Gaines, E. C.....Buffalo Lake
Gallagher, B. J.....Waseca
Galligan, Margaret M. D..Minneapolis
Galloway, J. B.....Minneapolis
†Gambill, C. M.....Rochester
Gambill, E. E.....Rochester
*Gamble, J. W.....Albert Lea
*Gamble, P. M.....Albert Lea
Gammell, J. H.....Minneapolis
Garbrecht, A. W.....St. Paul
Gardiner, D. G.....St. Paul
Gardner, V. H.....Fairmont
Gardner, W. P.....St. Paul

Garlock, A. V. ..... Bemidji
Garlock, D. H. ..... Bemidji
Garrow, D. M. ..... St. Paul
Garten, J. L. ..... Minneapolis
Garthe, J. J. ..... Vallejo, Calif.
Gastineau, C. F. ..... Rochester
Gates, E. M. ..... Rochester
Gay, J. R. ..... Rochester
Geer, E. K. ..... St. Paul
Gehlen, J. N. ..... St. Paul
Geist, G. A. ..... St. Paul
*Gendron, J. F. ..... Grand Rapids
Geraci, J. E. ..... Rochester
Gerber, M. P. ..... Brainerd
Gericke, J. T., Jr. ..... Glenwood
Ghent, C. H. ..... St. Paul
Ghormley, R. K. ..... Rochester
Ghostley, Mary C. ..... Puposky
Gibbons, F. C. ..... Comfrey
Gibbs, E. C. ..... St. Paul
Gibbs, R. W. ..... Minneapolis
Gibson, D. P. ..... St. Paul
Gibson, R. H. ..... Rochester
Giebenhain, J. N. ..... Minneapolis
Giere, J. C. ..... Minneapolis
Giere, R. W. ..... Minneapolis
Giere, S. W. ..... Willmar
Giesen, A. F. ..... Starbuck
†Giessler, P. W. ..... Minneapolis
Giffin, H. Z. ..... Rochester
Giffin, Mary E. ..... Rochester
Gilbert, M. G. ..... Minneapolis
†Gilfillan, J. S. ..... St. Paul
Gilkey, S. E. ..... St. Paul
Gillespie, D. R. ..... St. Paul
Gillespie, M. G. ..... Duluth
Gilman, L. C. ..... Willmar
†Gilmore, Rowland ..... Bemidji
Gingold, B. A. ..... Minneapolis
*†Ginsberg, Wm. ..... St. Paul
Giroux, A. A. ..... No. Mankato
Girvin, R. B. ..... Minneapolis
Gjerde, W. P. ..... St. Paul
Glabe, R. A. ..... Plainview
Gleason, W. A. ..... St. Paul
Glenn, W. V. ..... Rochester
Goblirsch, A. P. ..... Sleepy Eye
Goehrs, G. H. ..... St. Cloud
Goehrs, H. W. ..... St. Cloud
Gagela, L. J. ..... Rochester
Goldberg, I. M. ..... Minneapolis
‡Golden, P. B. ..... Rochester
Goldish, D. R. ..... Duluth
Goldman, T. I. ..... Minneapolis
Goldner, M. Z. ..... Minneapolis
Goldsmith, J. W. ..... St. Paul
†Goltz, E. V. ..... St. Paul
Gooch, J. O. ..... Rochester
Good, C. A., Jr. ..... Rochester
Good, H. D. ..... Minneapolis
Goodman, C. E. ..... Virginia
Gordon, P. E. ..... Minneapolis
Goss, H. C. ..... Glencoe
Goss, Martha D. ..... Glencoe
Gowan, L. R. ..... Duluth
Graham, A. W. ..... Chisholm
Graham, F. M. ..... Rochester
Graham, R. J. ..... Rochester
Grahek, J. P. ..... Ely
Gramse, A. E. ..... Rochester
Grant, H. W. ..... St. Paul
Grant, J. C. ..... Sauk Center
Gratzek, F. R. E. ..... Minneapolis
Gratzek, Thomas ..... St. Paul
Grau, R. K. ..... St. Paul
Grave, Floyd ..... Minneapolis
Graves, R. B. ..... Red Wing
Graves, W. N. ..... Duluth
Gray, C. P. ..... Rochester
Gray, F. D. ..... Marshall
Gray, H. K. ..... Rochester
Gray, R. C. ..... Minneapolis
*Green, R. G. ..... Minneapolis
Greene, L. F. ..... Rochester
Greenfield, W. T. ..... Delano
Gridley, J. W. ..... Glencoe
Griffin, J. G. ..... Rochester
Griffin, R. P. ..... Benson
Griffith, E. R. ..... Rochester
Grimes, B. P. ..... St. Peter
Grimes, Marian ..... Minneapolis
Grindlay, J. H. ..... Rochester
Grinley, A. V. ..... Grand Rapids
Grise, W. B. ..... Austin
Grogan, J. M. ..... Ceylon
Grogan, J. S. ..... Wadena
Gronvall, P. R. ..... Minneapolis
Groom, Dale ..... Rochester
Groschupf, T. P. ..... Bemidji
Grose, F. N. ..... Clarissa
Groskloss, H. H. ..... Minneapolis
Gross, J. B. ..... Rochester
Grotting, J. K. ..... Rochester
Grugenhagen, A. P. ..... St. Paul
Grundset, O. J. ..... Montrose

Guernsey, D. E. ..... Rochester
Guilbert, G. D. ..... Wood, Wis.
Guilfoile, P. J. ..... Delano
Gully, R. J. ..... Cambridge
Gunlaugson, F. D. ..... Fergus Falls
Gushurst, E. G. ..... Minneapolis
Gustason, H. T. ..... Minneapolis

Habein, H. C. ..... Rochester
Haberer, Helen R. ..... Minneapolis
Haberle, C. A. ..... Thief River Falls
Haberman, Emil ..... Osakis
Haes, J. E. ..... Mankato
Hagedorn, A. B. ..... Rochester
Hagen, O. J. ..... Moorhead
Hagen, P. S. ..... Minneapolis
Hagen, W. S. ..... Minneapolis
†Haggard, G. D. ..... Minneapolis
Haight, G. G. ..... Audubon
†Haines, J. H. ..... Stillwater
Haines, R. D. ..... Rochester
Haines, S. F. ..... Rochester
Halenbeck, P. L. ..... St. Cloud
*Hall, A. R. ..... St. Paul
Hall, B. E. ..... Rochester
Hall, H B. ..... Minneapolis
Hall, H. H. ..... St. Paul
Hall, W. E. ..... Maple Lake
Hall, W. H. ..... Minneapolis
Halladay, G. J. ..... Minneapolis
Hallberg, C. A. ..... Minneapolis
Hallberg, O. E. ..... Rochester
Hallenbeck, D. F. ..... Rochester
Hallenbeck, G. A. ..... Rochester
Hallin, R. P. ..... Worthington
Halloran, W. H. ..... Jackson
Halme, W. B. ..... Cloquet
Halpern, D. J. ..... Brewster
Halpin, J. E. ..... Rush City
Hamilton, C. F. ..... Rochester
*Hamlin, G. B. ..... Minneapolis
Hamlon, J. S. ..... St. Charles
Hamm, R. S. ..... Rochester
*Hammermeister, T. F. ..... New Ulm
†Hammerstad, L. M. ..... Minneapolis
Hammes, E. M. ..... St. Paul
Hammes, E. M., Jr. ..... St. Paul
Hammond, A. J. H. ..... Minneapolis
Hammond, J. F. ..... St. Paul
Haney, C. L. ..... Duluth
Hankerson, R. G. ..... Minnesota Lake
Hanlon, D. G. ..... Rochester
Hanlon, G. H. ..... Rochester
Hannah, H. B. ..... Minneapolis
Hanover, R. D. ..... Littlefork
Hansbro, G. L. ..... Rochester
Hansen, C. O. ..... Minneapolis
Hansen, E. W. ..... Minneapolis
Hansen, Olga S. ..... Minneapolis
Hansen, R. E. ..... Hibbing
Hansen, T. M. ..... Albert Lea
Hanson, A. M. ..... Faribault
Hanson, E. O. ..... Cloquet
Hanson, E. C. ..... New York Mills
Hanson, H. J. ..... Minneapolis
Hanson, H. B. ..... St. Paul
Hanson, H. V. ..... Minneapolis
Hanson, J. W. ..... Northfield
Hanson, Lewis ..... Frost
Hanson, M. B. ..... Minneapolis
Hanson, N. O. ..... Rochester
Hanson, W. A. H. ..... Minneapolis
Happe, L. J. ..... Minneapolis
Hargraves, M. M. ..... Rochester
Harmon, G. E. ..... St. Paul
Harriman, Leonard .... Howard Lake
*Harrington, C. D. ..... Minneapolis
Harrington, S. W. ..... Rochester
Harris, C. N. ..... Hibbing
Harris, E. S. ..... St. Paul
Harris, L. E. ..... Rochester
Harrison, P. W. ..... Worthington
Hart, G. M. ..... Rochester
Hart, V. L. ..... Minneapolis
Hart, W. E. ..... Monticello
Hartfiel, H. A. ..... Montevideo
Hartfiel, W. F. ..... St. Paul
Hartig, Hermina A. ..... Minneapolis
Hartig, Marjorie ..... St. Paul
Hartley, E. C. ..... St. Paul
Hartman, H. R. ..... Rochester
Hartnagel, G. F. ..... Red Wing
Hartung, E. H. ..... Claremont
†Hartzell, T. B. ..... Minneapolis
Harvard, B. M., Jr. ..... Rochester
Harvey, George, Jr. ..... Rochester
Haskell, A. D. ..... Alexandria
Haserick, J. R. ..... Minneapolis
Hass, F. M. ..... Jordan
Hassett, M. F. ..... St. Paul
Hassett, R. G. ..... Mankato
Hasskarl, W. F. ..... Rochester
Hastings, D. R. ..... Minneapolis
Hastings, D. W. ..... Minneapolis
Hatch, W. E. ..... Duluth

Hatcher, A. C. ..... Rochester
Hathaway, S. J. ... Tacoma, Wash.
Hauge, E. T. ..... Minneapolis
Hauge, M. I. ..... Clarkfield
Haugen, G. W. ..... Minneapolis
Haugen, J. A. ..... Minneapolis
Hauser, V. P. ..... St. Paul
Havel, H. W. ..... Jordan
Haven, W. K. ..... Minneapolis
Havens, F. Z. ..... Rochester
Havens, J. G. W. ..... Austin
Hawkinson, R. P. ..... Minneapolis
Hay, Sam H. ..... Rochester
Hayes, A. F. ..... St. Paul
Hayes, J. M. ..... Minneapolis
Hayes, M. F. ..... Nashwauk
Hayles, A. B. ..... Rochester
Haynes, A. L. ..... Rochester
Hays, A. T. ..... Minneapolis
Head, D. P. ..... Minneapolis
Head, G. D. ..... Minneapolis
Headley, N. E. ... Los Angeles, Calif.
Healy, R. T. ..... Pierz
Hebbel, Robert ..... Minneapolis
Hebeisen, M. B. ..... Chaska
Heck, F. J. ..... Rochester
Heck, W. W. ..... St. Paul
Hedback, A. E. ..... Minneapolis
Hedberg, G. A. ..... Nopeming
Hedemark, H. H. ..... Ortonville
Hedemark, T. A. ..... Ortonville
Hedenstrom, F. G. ..... St. Paul
Hedenstrom, L. H. ..... Cambridge
Hedin, R. F. ..... Red Wing
Heersema, P. H. ..... Rochester
Hegge, O. H. ..... Austin
Hegge, R. S. ..... Austin
Heiam, W. C. ..... Cook
Heiberg, E. A. ..... Fergus Falls
Heiberg, O. M. ..... Worthington
Heilman, D. M. H. ..... Rochester
Heilman, F. R. ..... Rochester
Heim, R. R. ..... Minneapolis
Heimark, J. J. ..... Fairmont
Heinrich, W. A. ..... Rochester
Heinz, I. B. ..... Wabasso
Heinz, L. H. ..... Wabasso
Heise, Herbert ..... Winona
Heise, Paul ..... Winona
Heise, P. R. ..... Winona
†Heise, W. F. C. ..... Winona
Heise, W. V. ..... Winona
Helferty, J. K. ..... Minneapolis
†Helland, G. M. ..... Spring Grove
Helland, J. W. ..... Spring Grove
Helmholz, H. F. ..... Rochester
Helseth, H. K. ..... Fergus Falls
Hempstead, B. E. ..... Rochester
†Hemstead, Werner ..... Fergus Falls
Hench, P. S. ..... Rochester
Henderson, A. J. G. ..... St. Paul
‡Henderson, E. D. ..... Rochester
Henderson, J. W. ..... Rochester
Henderson, L. L. ..... Rochester
Henderson, M. S. ..... Rochester
Hendricks, E. J. ..... St. Paul
†Hendrickson, J. F. ..... Minneapolis
Hendrickson, R. R. ..... Lake Park
Henegar, G. C. ..... Rochester
Hengstler, W. H. ..... St. Paul
Henkel, H. B. ..... Rochester
Henney, W. H. ..... McIntosh
Henrikson, E. C. ..... Minneapolis
Henry, C. J. ..... Milaca
†Henry, C. E. ..... Kirksville, Mo.
Henry, M. O. ..... Minneapolis
Henry, M. R. ..... St. Peter
Hensel, C. N. ..... St. Paul
Henslin, A. E. ..... Le Roy
Henslin, M. E. ..... Cresco, Iowa
Herbert, W. L. ..... Minneapolis
Herbst, R. F. ..... Wykoff
Herman, S. M. ..... St. Paul
Hermann, H. W. ..... Caledonia
Hermanson, P. E. ..... Hendricks
Heron, R. C. ..... St. Paul
Herrell, W. E. ..... Rochester
Herrmann, E. T. ..... St. Paul
Hertel, G. E. ..... Austin
Hertz, M. J. ..... St. Paul
Hertzog, A. J. ..... Minneapolis
Hesdorffer, M. B. ..... Minneapolis
Hetherington, J. A. ..... Rochester
Hewitt, Edith S. ..... Rochester
†Hewitt, R. M. ..... Rochester
†Heyerdale, O. C. ..... Rochester
Higgins, J. H. ..... Minneapolis
Higgs, W. W. ..... Park Rapids
Hightower, N. C., Jr. .... Rochester
Hildebrand, C. H., Jr. ..... Rochester
Hilding, A. C. ..... Duluth
Hilger, A. W. ..... St. Paul
†Hilger, D. D. ..... St. Paul
Hilger, J. A. ..... St. Paul
Hilger, L. A. ..... St. Paul

Hilger, L. D. ..... St. Paul
Hilker, M. D. ..... St. Paul
Hill, E. M. ..... Minneapolis
Hill, F. E. ..... Duluth
Hill, J. R. ..... Rochester
Hillis, S. J. ..... Minneapolis
Hinckley, R. G. ..... Minneapolis
Hines, E. A., Jr. ..... Rochester
Hiniker, L. P. ..... St. Paul
Hiniker, P. J. ..... Le Sueur
Hinshaw, H. C. ..... Rochester
Hinz, W. E. ..... Bird Island
Hirschboeck, F. J. ..... Duluth
Hirshfield, F. R. ..... Minneapolis
Hitchcock, C. R. ..... Minneapolis
Hitchings, W. S. ..... Lakefield
†Hoaglund, A. W., Santa Monica, Calif.
Hochfilzer, J. J. ..... St. Paul
Hodapp, R. J. ..... Willmar
Hodge, S. V. ..... Minneapolis
Hodgson, C. H. ..... Rochester
Hodgson, J. R. ..... Rochester
Hodgson, J. E. ..... St. Paul
Hoeper, P. G. ..... Mankato
Hoff, Alfred ..... St. Paul
Hoff, H. O. ..... Duluth
†Hoffbauer, F. W. ..... New York
Hoffert, H. E. ..... Minneapolis
Hoffman, R. A. ..... Minneapolis
Hoffman, W. L. ..... Minneapolis
Hogben, C. A. M. ..... Rochester
Hoidale, A. D. ..... Tracy
Holcomb, J. T. ..... Marine-on-St. Croix
Holcomb, O. W. ..... St. Paul
Hollands, Wm. H. ..... Fisher
Hollenhurst, R. W. ..... Rochester
Hollinshead, W. H. ..... St. Paul
Holm, H. H. ..... Glencoe
†Holm, P. F. ..... Wells
Holman, Colin B. ..... Rochester
Holmberg, C. J. ..... Minneapolis
Holmberg, L. J. ..... Canby
Holmen, R. W. ..... St. Paul
Holmes, A. E. ..... Rush City
Holmstrom, C. H. ..... Warren
Holt, G. W. ..... Hastings
Holt, J. F. ..... St. Paul
Holt, R. P. ..... Oklahoma
Holtan, Theodore ..... Waterville
Holzapfel, F. C. ..... Minneapolis
Hoon, J. R. ..... Rochester
Hopkins, G. W. ..... St. Paul
Hoppes, E. E. ..... Rochester
Horning, E. D. ..... Rochester
Horns, R. C. ..... Minneapolis
Horton, B. T. ..... Rochester
Hottinger, R. C. ..... Janesville
Houkom, S. S. ..... Duluth
†House, Z. E. ..... California
Houston, D. M. ..... Park Rapids
Hovde, Rolf ..... Winthrop
Hovland, M. L. ..... Minneapolis
Howard, E. G. ..... Mapleton
Howard, M. I. ..... Mankato
Howard, M. A. ..... St. Paul
Howard, S. E. ..... Minneapolis
Howard, W. S. ..... St. Paul
Howe, N. W. ..... St. Paul
Howell, L. P. ..... Rochester
Hoyer, L. J. ..... Windom
Hubbard, O. E. ..... Brainerd
Hubin, E. G. ..... Sandstone
Hudec, E. R. ..... Echo
Hudson, G. E. ..... Minneapolis
Huenekens, E. J. ..... Minneapolis
Huffington, H. L. ..... Mankato
Hullsiek, H. E. ..... St. Paul
Hullsiek, R. B. ..... St. Paul
Hultgen, W. J. ..... St. Paul
Hultkrans, J. C. ..... Minneapolis
Hultkrans, R. E. ..... Minneapolis
Humphrey, E. W. ..... Moorhead
Humphrey, W. R. ..... Stillwater
Hunt, A. B. ..... Rochester
Hunt, R. C. ..... Fairmont
Hunt, R. S. ..... Fairmont
Hunt, V. W. ..... Rochester
Hunte, A. F. ..... Alhambra, Calif.
†Hurd, Annah ..... Minneapolis
‡Hurley, J. P. ..... Massachusetts
Hurwitz, M. M. ..... St. Paul
‡Hutchinson, C. J. ..... Minneapolis
Hutchinson, D. W. ..... Oak Terrace
Hutchinson, Henry ..... Moose Lake
Huxley, F. R. ..... Faribault
Hymes, Charles ..... Minneapolis
Hynes, J. E. ..... Minneapolis

†Ide, A. W. ..... St. Paul
Idstrom, L. G. ..... Wayzata
Ikeda, Kano ..... St. Paul
Ingebrigtson, E. K. G. ..... Moorhead
Ingerson, C. A. ..... St. Paul
Irmisch, G. W. ..... New Jersey
Irvine, H. G. ..... Minneapolis
Iverson, R. M. ..... Minneapolis
Ivins, J. C. ..... Rochester

Jackman, R. J. ..... Rochester
Jackson, A. E. ..... Rochester
Jackson, H. S. ..... Rochester
Jacobs, D. L. ..... Willmar
Jacobs, G. C. ..... Fergus Falls
Jacobs, J. C. ..... Willmar
Jacobson, Clarence ..... Chisholm
Jacobson, C. W. ..... Breckenridge
Jacobson, F. C. ..... Duluth
James, E. M. ..... Minneapolis
Jamieson, E. F. ..... Brainerd
Janecky, A. G. ..... Warroad
Janes, J. M. ..... Rochester
Janssen, M. E. ..... St. Paul
Jarrett, Paul S. ..... Rochester
‡Jennings, D. T. ..... Rochester
Jensen, A. M. ..... Brownton
Jensen, G. L. ..... Rochester
Jensen, H. C. ..... Minneapolis
†Jensen, M. J. ..... Minneapolis
Jensen, N. K. ..... Minneapolis
Jensen, R. A. ..... Minneapolis
Jensen, T. J. ..... Duluth
Jesion, J. W. ..... St. Paul
Jerome, B. ..... Minneapolis
Jeronimus, H. J. ..... Duluth
Jessico, C. M. ..... Duluth
Joffe, H. H. ..... Duluth
Johanson, W. G. ..... St. Paul
Johns, Sylvia ..... Rochester
Johnson, A. B. ..... Minneapolis
Johnson, A. E. ..... Minneapolis
Johnson, A. E. ..... Red Wing
Johnson, A. F. ..... Isanti
Johnson, A. M. ..... St. Paul
Johnson, B. H. ..... Rochester
‡Johnson, C. C. ..... Georgia
Johnson, C. E. ..... Iowa
Johnson, C. E. ..... St. Paul
Johnson, C. P. ..... Tyler
Johnson, D. L. ..... Little Falls
Johnson, E. A. ..... Thief River Falls
Johnson, E. W. ..... Bemidji
Johnson, E. W., Jr. ..... Rochester
Johnson, E. W. ..... Minneapolis
Johnson, Evelyn V. ..... Minneapolis
Johnson, Hans ..... Kerkhoven
Johnson, H. A. ..... Minneapolis
Johnson, H. A. ..... Rochester
Johnson, H. C. ..... North Mankato
Johnson, H. C. ..... Thief River Falls
*Johnson, H. E. ..... Bird Island
Johnson, J. A. ..... St. Paul
Johnson, J. A. ..... Minneapolis
†Johnson, J. W. ..... St. Louis Park
Johnson, Julius ..... Minneapolis
Johnson, K. E. ..... Duluth
Johnson, M. A. ..... Storden
Johnson, M. A., III ..... Rochester
Johnson, M. R. ..... Minneapolis
†Johnson, N. A. ..Santa Monica, Calif.
Johnson, N. P. ..... Minneapolis
Johnson, N. T. ..... Minneapolis
Johnson, O. H. ..... Redwood Falls
Johnson, Olga H. ..... Moorhead
Johnson, R. B. ..... Lanesboro
Johnson, R. G. ..... Minneapolis
Johnson, R. G. ..... Stillwater
Johnson, Reuben A. ..... Minneapolis
Johnson, R. E. ..... Crookston
Johnson, R. E. ..... Minneapolis
Johnson, R. M. ..... Slayton
Johnson, V. M. ..... Dawson
Johnson, W. E. ..... Morgan
Johnson, Y. T. ..... Minneapolis
Johnsrud, L. W. ..... Chisholm
Johnston, L. F. ..... Winona
Jolin, F. M. ..... Bovey
Jondahl, W. H. ..... Rochester
†Jones, A. W. ..... Red Wing
Jones, E. M. ..... St. Paul
Jones, H. W., Jr. ..... Minneapolis
Jones, J. R. ..... Rochester
Jones, O. H. ..... Mankato
Jones, R. N. ..... St. Cloud
Jones, W. R. ..... Minneapolis
†Jordan, Kathleen ..... Granite Falls
Jordan, L. S. ..... Granite Falls
Josewich, Alexander ..... Minneapolis
Josewski, R. J. ..... Stillwater
Joyce, G. L. ..... Rochester
Judd, E. S., Jr. ..... Rochester
Judd, W. H. ..... Washington, D. C.
Juergens, H. M. ..... Belle Plaine
Juergens, M. F. ..... Belle Plaine
Juers, E. H. ..... Red Wing
Juliar, R. O. ..... St. Clair
Jurdy, M. J. ..... Minneapolis
Just, Herman J. ..... Hastings

Kabler, P. W. ..... Minneapolis
Kabrick, O. A. ..... Jackson
Kadish, A. H. ..... California
Kahiher, Howard ..... Pelican Rapids
Kalin, O. T. ..... Minneapolis
Kallestad, L. L. ..... Brownton
Kamman, G. R. ..... St. Paul
Kamp, B. A. ..... Albert Lea
Kaplan, D. H. ..... St. Paul
Kaplan, J. J. ..... Minneapolis
Kapsner, A. T. ..... Princeton
Karleen, B. N. ..... Jackson
Karleen, C. I. ..... Minneapolis
Karlstrom, A. E. ..... Minneapolis
Karn, B. R. ..... Ortonville
Karn, J. F. ..... Ortonville
Karon, I. M. ..... St. Paul
Kasper, E. M. ..... St. Paul
Kath, R. H. ..... Wood Lake
Katz, L. J. ..... St. Paul
Katzovitz, Hyman ..... St. Paul
Kaufman, E. J. ..... Appleton
Kaufman, H. J. ..... Minneapolis
Kaufman, W. B. ..... Mankato
Kaufman, W. C. ..... Appleton
Kearney, R. W. ..... Mankato
Keating, F. R., Jr. ..... Rochester
Keating, J. U. ..... Rochester
Keefe, R. E. ..... St. Paul
Keeley, J. K. ..... Rochester
Keffer, W. H. ..... Rochester
Keith, H. M. ..... Rochester
Keith, N. M. ..... Rochester
Keithahn, E. E. ..... Sleepy Eye
Kelby, G. M. ..... Minneapolis
Kelley, K. J. ..... Big Fork
Kelly, A. C. ..... Duluth
Kelly, J. F. ..... Cold Springs
Kelly, J. P. ..... Minneapolis
Kelly, J. V. ..... St. Paul
*Kelly, P. H. ..... St. Paul
Kelsey, C. M. ..... St. Paul
Kelsey, M. P. ..... Rochester
Kemp, A. F. ..... Mankato
Kemp, M. W. ..... No. Madison, Ill.
Kemper, C. M. ..... Rochester
Kenefick, E. V. ..... St. Paul
Kennedy, C. C. ..... Minneapolis
Kennedy, G. L. ..... Faribault
†Kennedy, J. F. ..... Minneapolis
Kennedy, R. L. J. ..... Rochester
Kennedy, T. J. ..... Rochester
Kennedy, W. A. ..... St. Paul
Kenyon, T. J. ..... St. Paul
*Kepler, E. J. ..... Rochester
Kerkhof, A. C. ..... Minneapolis
Kernohan, J. W. ..... Rochester
Kertesz, G. ..... Minneapolis
Kesting, Herman ..... St. Paul
Kettlewell, R. B. ..... Sauk Centre
Keyes, I. D. ..... Winona
*Kierland, P. E. ..... Alexandria
Kierland, R. R. ..... Rochester
†Kilbride, J. S. ..... Worthington
Kimmel, G. C., Jr. ..... Red Wing
†King, E. A. ..... Minneapolis
King, F. W. ..... Oak Terrace
King, G. L. ..... St. Paul
King, N. B. ..... Rochester
Kinsella, T. J. ..... Minneapolis
Kinsport, E. B. ..International Falls
Kirby, J. L. ..... Rochester
Kirk, G. P. ..... East Grand Forks
Kirklin, B. R. ..... Rochester
Kirklin, J. W. ..... Rochester
Kirkpatrick, N. R. ..... Rochester
Kistler, A. J. ..... Minneapolis
†*Kistler, C. M. ..... Minneapolis
Klefstad, L. H. ..... Greenbush
Kleifgen, G. V. H. ..... St. Paul
Klein, Harry ..... Duluth
Klein, H. N. ..... St. Paul
Klein, J. C. ..... Shakopee
Klein, Wm. A. ..... Duluth
Klima, W. W. ..... Stewart
Klontz, C. E., Jr. ..... Rochester
Knapp, F. N. ..... Duluth
Knapp, M. E. ..... Minneapolis
†*Knauff, M. K. ..... St. Paul
Knight, E. G. ..... Swanville
Knight, R. R. ..... Minneapolis
Knight, R. T. ..... Minneapolis
‡Knisely, R. M. ..... Rochester
Knoll, W. V. ..... Duluth
Knutson, G. A. ..... Hallock
Knutson, G. E. ..... St. Paul
Knutson, J. R. B. ..... Rochester
Knutson, L. A. ..... Spring Grove
Koelsche, G. A. ..... Rochester
Koenigsberger, Charles ..... Mankato
Koepcke, G. M. ..... Minneapolis
Kohlbry, C. O. ..... Duluth
Kohler, D. W. ..... St. Joseph
Kolars, J. J. ..... Faribault
Koller, H. M. ..... Minneapolis
Koller, L. R. ..... Minneapolis
Koop, S. H. ..... Richmond

Korchik, J. P. ..... Minneapolis
Korda, H. A. ..... Pelican Rapids
Kortsch, F. P. ..... Prior Lake
Koskela, A. L. ..... Deer River
Koskela, L. D. ..... Deer River
Kostick, W. R. ..... Fertile
Kotchevar, F. R. ..... Eveleth
Kottke, F. J. ..... Minneapolis
Koucky, R. W. ..... Minneapolis
Kraemer, G. N. ..... Canby
Krause, C. W. ..... Fairmont
Kreilkamp, B. L. ..... Rochester
Kremen, A. J. ..... Minneapolis
Kreman, I. C. ..... Duluth
Kreuzer, T. C. ..... Marshall
Krieser, A. E. ..... Ah-gwah-ching
Krueger, V. R. ..... Nopeming
Kruzick, S. J. ..... Sleepy Eye
Krusen, F. H. ..... Rochester
Kucera, F. J. ..... Hopkins
Kucera, S. T. ..... Lonsdale
Kucera, W. J. ..... Minneapolis
Kugler, A. A. ..... St. Paul
Kuhlman, L. B. ..... Melrose
Kurtin, H. J. ..... Blooming Prairie
Kurzweg, F. T. ..... Louisiana
Kuske, A. W. ..... St. Paul
Kusske, A. L. ..... New Ulm
Kusske, B. W. ..... Caledonia
Kvale, W. F. ..... Rochester
Kvitrud, Gilbert ..... St. Paul
LaBree, R. H. ..... Duluth
Lagaard, S. M. ..... Minneapolis
Laikola, L. A. ..... Adrian
Laird, A. T. ..... Duluth
Lajoie, J. M. ..... Minneapolis
Lake, C. F. ..... Rochester
Lamont, C. S. ..... Rochester
Lampert, E. G. ..... Rochester
Landry, R. M. ..... Rochester
Long, C. M. ..... Rochester
Lang, L. A. ..... Minneapolis
Langhoff, A. H. ..... St. Peter
Lannin, B. G. ..... St. Paul
Lannin, J. C. ..... Mabel
Lapierre, A. P. ..... Minneapolis
Lapierre, J. T. ..... Minneapolis
Larrabee, W. F., Jr. ..... Rochester
Larsen, C. L. ..... St. Paul
Larsen, F. W. ..... Minneapolis
Larson, Arnold ..... Detroit Lakes
Larson, C. M. ..... Minneapolis
Larson, E. A. ..... Minneapolis
Larson, Eva-Jane ..... St. Paul
Larson, J. T. ..... South St. Paul
Larson, K. R. ..... St. Paul
Larson, L. M. ..... Minneapolis
Larson, Leonard M. .... Oak Terrace
Larson, Leroy ..... Bagley
Larson, M. H. ..... Nicollet
Larson, P. G. ..... Cleveland, Ohio
Larson, P. N. ..... Minneapolis
Larson, R. H. ..... Anoka
Laughlin, J. T. ..... Grey Eagle
La Vake, R. T. ..... Minneapolis
Law, S. G. ..... Minneapolis
Lax, M. H. ..... St. Paul
Laymon, C. W. ..... Minneapolis
Leahy, Bartholomew ..... St. Paul
Leary, W. V. ..... Rochester
Leavenworth, R. O. ..... St. Paul
†Leavitt, H. H. ..... Minneapolis
Leavitt, M. D. ..... Rochester
LeBlanc, L. J. ..... Rochester
Lebowske, J. A. ..... Minneapolis
Leck, P. C. ..... Austin
Leden, U. M. ..... Rochester
Leddy, E. T. ..... Rochester
Lee, H. M. ..... Minneapolis
Lee, H. W. ..... Brainerd
Lee, J. B. ..... Rochester
Lee, M. J., Jr. ..... Rochester
Lee, W. N. ..... Madison
Leemhuis, G. H. ..... Aitkin
Lehman, S. J. ..... Thief River Falls
Leibold, H. H. ..... Parkers Prairie
Leick, R. M. ..... St. Paul
Leitch, Archibald ..... St. Paul
Leland, H. R. ..... Minneapolis
Lemon, W. E. ..... Rochester
Lemon, W. S. ..... Rochester
Lenander, M. E. L. ..... St. Peter
Lenarz, A. J. ..... Browerville
Lende, Norman ..... Faribault
Lenont, C. B. ..... Virginia
Lenz, J. R. ..... Morton
Lenz, O. A. ..... Minneapolis
Leonard, L. J. ..... Minneapolis
Leonard, Samuel ..... Minneapolis
Leopard, B. A. ..... Albert Lea
Lepak, F. J. ..... Duluth
Lepak, J. A. ..... St. Paul
†Lerche, William ..... Cable, Wis.
Lerner, A. R. ..... Minneapolis
Leven, N. L. ..... St. Paul

Leverenz, C. W. ..... St. Paul
Levin, Bert ..... St. Paul
Levitt, G. X. ..... St. Paul
Lewis, A. J. ..... Henning
Lewis, C. B. ..... St. Cloud
Lewis, C. W. ..... Henning
Lexa, F. J. ..... Lonsdale
Libert, J. N. ..... St. Cloud
Lick, C. L. ..... St. Paul
Liedloff, A. G. ..... Mankato
Lien, R. J. ..... St. Paul
Liffrig, W. W. ..... Red Wing
Lightbourn, E. L. ..... St. Paul
Lilleberg, N. J. ..... St. Paul
Lillehei, E. J. ..... Robbinsdale
Lillie, H. I. ..... Rochester
Lillie, J. C. ..... Rochester
Lima, L. R. ..... Montevideo
Lima, L. R., Jr. ..... Montevideo
Lind, C. J. ..... Minneapolis
‡Lind, C. J., Jr. ..... Minneapolis
Lindberg, A. L. ..... Wheaton
Lindberg, A. C. ..... Minneapolis
Lindberg, V. L. ..... Minneapolis
Lindblom, A. E. ..... Minneapolis
†Linde, Herman ..... Cyrus
Lindgren, R. C. ..... Minneapolis
Lindley, S. B. ..... Willmar
Lindquist, R. H. ..... Minneapolis
Linner, H. P. ..... Minneapolis
Linner, J. H. ..... Minneapolis
Lippman, E. S. ..... Minneapolis
Lippman, H. S. ..... St. Paul
Lippmann, E. W. ..... Hutchinson
Lipschultz, Oscar ..... Minneapolis
Lipscomb, P. R. ..... Rochester
Lister, K. E. ..... Minneapolis
Litchfield, J. T. ..... Minneapolis
Litman, A. B. ..... Minneapolis
Litman, S. N. ..... Duluth
†Litzenberg, J. C. ..... Minneapolis
Llewellyn, M. B. ..... Minneapolis
Lofgren, K. A. ..... Rochester
Lofsness, S. V. ..... Minneapolis
Logan, Arch, Jr. ..... Rochester
Logan, A. H. ..... Rochester
Logan, G. B. ..... Rochester
Logefeil, R. C. ..... Minneapolis
Lohmann, J. G. ..... Pipestone
Loken, Theodore ..... Ada
Loken, S. M. ..... St. Paul
Lombardi, A. A. ..... Rochester
Lommen, P. A. ..... Austin
Long, J. W. ..... Rochester
Longfellow, Helen B. W. .. Brainerd
Loofbourrow, E. H. ..... Keewatin
Loomis, E. A. ..... Minneapolis
Loomis, G. L. ..... Winona
Love, F. A. ..... Carlos
Love, J. G. ..... Rochester
Lovelady, S. B. ..... Rochester
Lovett, Beatrice R. .... Oak Terrace
Lovshin, L. L. ..... Rochester
Lowe, E. R. ..... So. St. Paul
Lowe, T. A. ..... So. St. Paul
Lowry, Elizabeth C. .... Minneapolis
Lowry, Thomas ..... Minneapolis
Lowy, A., Jr. ..... Rochester
Loyd, Earl L. ..... Missouri
Luck, Hilda ..... Mankato
Luckemeyer, C. J. ..... St. Cloud
Ludden, T. E. ..... Rochester
Luellen, T. J. ..... Rochester
Lufkin, N. H. ..... Minneapolis
Lund, C. J. T. ..... Fergus Falls
Lund, W. J. ..... Staples
Lundberg, Ruth I. ..... Minneapolis
Lundblad, R. A. ..... Minneapolis
Lundblad, S. W. ..... Minneapolis
Lundell, C. L. ..... Granite Falls
Lundgren, A. C. ..... Minneapolis
Lundholm, A. M. ..... St. Paul
Lundquist, C. W. ..... Owatonna
Lundquist, E. F. ..... Minneapolis
Lundy, J. S. ..... Rochester
Luth, D. V. ..... Duluth
Lyman, R. W. ..... Rochester
Lynch, F. W. ..... St. Paul
Lynch, J. L. ..... Winona
Lynch, M. J. ..... Minneapolis
Lynde, O. G. ..... Los Gatos, Calif.
Lysne, Henry ..... Minneapolis
Lysne, Myron ..... Minneapolis

MacCarty, C. S. ..... Rochester
†MacCarty, W. C. ..... Rochester
†MacDonald, A. E. ..... Minneapolis
MacDonald, D. A. ..... Minneapolis
Macdonald, I. D. ..... Rochester
MacFarlane, P. H. ..... Chisholm
Mach, F. B. ..... Minneapolis
Mack, J. J. ..... Little Rock, Ark.
MacKinnon, D. C. ..... Minneapolis
Macklin, W. E., Jr. ..... Mankato
MacLean, A. R. ..... Rochester

MacMillan, D. G. ..... Minneapolis
‡MacMurtrie, W. J., Jr. ..... Maryland
Macnie, J. S. ..... Minneapolis
MacRae, G. C. ..... Duluth
Macy, Dorothy ..... Rochester
Madden, J. F. ..... St. Paul
Madland, R. S. ..... St. Paul
Maeder, E. C. ..... Minneapolis
Maertz, R. W. ..... Goodhue
Maertz, W. F. ..... St. Paul
Magath, T. B. ..... Rochester
Magney, F. H. ..... Duluth
Magnuson, A. E. ..... Wheaton
Magraw, R. M. ..... St. Paul
Mahle, D. G. ..... Plainview
Mahowald, A. ..... Albany
Maitland, E. T. ..... Jackson
Maland, C. O. ..... Minneapolis
Malerich, J. A. ..... St. Paul
Malmstrom, J. A. ..... Virginia
*Manley, J. R. ..... Duluth
†Mann, F. C. ..... Rochester
†Manson, F. M. ..... Worthington
†Marcley, W. J. ..... Minneapolis
Marek, F. H. ..... Rochester
Margulies, Harold ..... Rochester
Mariette, E. S. ..... Oak Terrace
Mark, D. B. ..... Minneapolis
Mark, Hilbert ..... Minneapolis
Marking, G. H. ..... Minneapolis
Marks, R. W. ..... St. Paul
Martin, D. L. ..... St. Paul
Martin, G. M. ..... Rochester
Martin, T. P. ..... Arlington
Martin, W. B. ..... Rochester
Martin, W. C. ..... Duluth
Martineau, J. L. ..... St. Paul
Martinson, C. J. ..... Wayzata
†Martinson, E. J. ..... Wayzata
Masson, D. M. ..... Rochester
Masson, J. C. ..... Rochester
†Matchan, G. R. ..... Minneapolis
Mattill, P. M. ..... Oak Terrace
Mattison, P. A. ..... Winona
Mattson, A. D. ..... Madison
Mattson, H. A. N. ..... Minneapolis
Maxeiner, S. R. ..... Minneapolis
Mayfield, L. H. ..... Rochester
†Mayne, R. M. ..... Duluth
Mayo, C. W. ..... Rochester
Maytum, C. K. ..... Rochester
McAdams, J. B. ..... St. Paul
McAnally, A. K. ..... Rochester
McBean, J. B. ..... Rochester
†McCaffrey, F. J. ..... Minneapolis
McCain, D. L. ..... St. Paul
McCann, D. F. ..... Bemidji
McCann, Eugene J. ..... Minneapolis
McCarten, F. M. ..... Stillwater
McCarthy, Donald ..... Minneapolis
McCarthy, J. J. ..... St. Paul
McCarthy, W. R. ..... St. Paul
McCartney, J. S. ..... Minneapolis
†McCarty, P. D. ..... Ely
McClanahan, J. H. ..... White Bear
McClanahan, T. S. ..... White Bear
McClellan, J. T. ..... Rochester
McCloud, C. N. ..... St. Paul
McConahey, W. M., Jr. .... Rochester
McCorkle, J. K. ..... Rochester
†McCoy, Mary K. ..... Duluth
McCready, F. J. ..... Rochester
McCreight, W. G. ..... Rochester
‡McCrimmon, H. P. ..... Minneapolis
†McDaniel, Orianna ..... Minneapolis
McDonald, A. L. ..... Duluth
McDonald, J. R. ..... Rochester
McDowell, J. P. ..... St. Cloud
McElin, T. W. ..... Rochester
McEnaney, C. T. ..... Owatonna
McEwan, Alexander ..... St. Paul
McFarland, A. H. ..... Minneapolis
McGandy, R. F. ..... Minneapolis
McGeary, G. D. ..... Clarkfield
McGeary, G. E. ..... Minneapolis
McGroarty, J. J. ..... Easton
McGuff, P. E. ..... Rochester
McGuigan, H. T. ..... Red Wing
McHaffie, O. L. ..... Duluth
McInerny, M. W. ..... Minneapolis
McIntire, H. M. ..... Waseca
McIntyre, J. A. ..... Owatonna
McIver, B. A. ..... Lowry
McKaig, C. B. ..... Pine Island
McKelvey, J. L. ..... Minneapolis
McKenna, J. K. ..... Austin
McKenna, M. J. ..... Grand Rapids
McKenzie, C. H. ..... Minneapolis
McKeon, J. O. ..... Faribault
McKinlay, C. A. ..... Minneapolis
†McKinley, J. C. ..... Minneapolis
McKinney, F. S. ..... Minneapolis
McLane, Wm. O. ..... Wadena
†McLaren, Jennette M. .. Minneapolis
McLaughlin, B. H. ..... Rochester

McLaughlin, E. M. .....Winona
McLeod, J. L.....Grand Rapids
McMahon, J. M. .....Rochester
McManus, W. F.....Princeton
McMillan, J. T. .....Rochester
McMurtrie, W. B.....Minneapolis
McNutt, J. R. .....Duluth
McPheeters, H. O. ....Minneapolis
McQuarrie, H. B. .....Rochester
†McQuarrie, Irvine .....Minneapolis
Mead, C. H. .....Duluth
Meade, J. R. .....St. Paul
‡Meadows, J. A., Jr.....California
Mears, B. J. .....St. Paul
Mears, R. F. .....Northfield
Medelman, J. P. .....St. Paul
Medlin, C. F. .....Truman
Medwick, J. X.....Rochester
Meinert, A. E. .....Winona
Melancon, J. F. .....St. Paul
Melby, Benedik ..Blooming Prairie
Mellby, O. F. ....Thief River Falls
Meller, R. L. .....Minneapolis
Melzer, G. R. .....Lyle
Menold, Wm. F.....St. Paul
Mercil, W. F. .....Crookston
Merendino, A. A.....St. Paul
Merkert, C. E. .....Minneapolis
Merkert, G. L. .....Minneapolis
Merner, T. B.....St. Paul
†Merrick, Charlotte T. ....Minneapolis
†Merrill, Elisabeth .....Minneapolis
Merrill, J. G.....Rochester
Merrill, R. W. .....Morris
Merriman, L. L. .....Duluth
Merritt, W. A. .....Rochester
Mesker, G. H. .....Cambridge
Messler, J. D. .....Rochester
Meyer, A. A. .....Melrose
Meyer, A. C. .....Rochester
Meyer, A. J. .....Minneapolis
Meyer, E. L. .....Minneapolis
Meyer, F. C. .....Kenyon
Meyer, J. O. .....Grand Rapids
Meyer, P. F. .....Faribault
Meyer, W. M. .....Rochester
Meyerding, E. A. .....St. Paul
Meyerding, H. W. .....Rochester
Mezen, J. F. .....Rochester
Michael, J. C. .....Minneapolis
Michel, H. H. .....Minneapolis
Michels, R. P. .....Willmar
Michelson, H. E. .....Minneapolis
†Mickelsen, Emma F.....Minneapolis
Mickelson, J. C. .....Mankato
Milhaupt, E. N. .....St. Cloud
Millen, F. J. .....Rochester
Miller, E. W. .....Anoka
Miller, H. E. .....Minneapolis
Miller, Hugo E. .....Minneapolis
Miller, J. C. .....Minneapolis
Miller, J. R.....Rochester
Miller, V. I. .....Mankato
Miller, W. A. .....New York Mills
Mills, J. L. .....Winnebago
Mills, M. D.....Rochester
Mills, S. D.....Rochester
Milton, J. S. .....Minneapolis
Minsky, A. A.....Minneapolis
Minty, E. W. .....Duluth
Mitby, I. L. .....Aitkin
Mitchell, B. D. .....Minneapolis
Mitchell, E. C. .....Minneapolis
Mitchell, M. T. .....Minneapolis
Mixer, H. W.....Minneapolis
Moberg, C. W. .....Detroit Lakes
Moe, Allen E.....Moorhead
Moe, J. H. .....Minneapolis
Moe, R. J. .....Duluth
Moe, Thomas .....Moose Lake
Moen, J. K., Jr. .....Minneapolis
Moehn, J. T.....Minneapolis
Moehring, H. G.....Duluth
Moersch, F. P. .....Rochester
Moersch, H. J. .....Rochester
Moga, J. A. .....St. Paul
Molander, H. A. .....St. Paul
Mollers, T. P.....Soudan
Monohan, Eliz. S.....Minneapolis
Monahan, R. H., Jr., ...
International Falls
Monroe, P. B. .....Cloquet
Monserud, N. O. .....Cloquet
Monson, E. M. .....Minneapolis
Monson, L. J.....Canby
Montgomery, G. E. .....Rochester
Montgomery, Hamilton ....Rochester
*Mooney, L. P.....Graceville
Moos, D. J. .....Minneapolis
Moquin, Marie A. .....St. Paul
*More, C. W.....Eveleth
Morehead, D. E. .....Owatonna
Moren, Edward .....Minneapolis
Morgan, E. H. .....Rochester
Morgan, H. O. .....Amboy
Morgan, J. L. .....Rochester
Moriarty, Berenice .....St. Paul
Moriarty, Cecile R. .....St. Paul
Mork, A. H. .....Anoka
Mork, B. O., Jr. .....Worthington
Mork, B. O., Sr. .....Worthington
Mork, F. E. .....Anoka
Morley, G. A.....Crookston
Morlock, C. G. .....Rochester
Morris, C. R.....Rochester
Morris, D. S. .....Rochester
Morrison, A. E., Jr.....Rochester
Morrison, A. W. .....Minneapolis
Morrison, Charlotte J. ..Minneapolis
Morrow, J. R. .....Rochester
Morse, M. P. .....Le Roy
Morse, R. W. .....Minneapolis
Morseman, L. W. .....Hibbing
Mosby, M. E. .....Long Prairie
*Moses, J., Jr.....Northfield
Moses, R. R. .....Kenyon
Mouritsen, G. J. .....Fergus Falls
Mueller, Selma C. .....Duluth
Muir, W. F. .....Browns Valley
Muller, A. E. ....North Saint Paul
Muller, R. T. .....St. Paul
Mulligan, A. M. .....Brainerd
Murphy, E. P. .....Minneapolis
Murphy, I. J. .....Minneapolis
Murphy, J. E. .....Marshall
Murphy, James E. .....St. Cloud
Murphy, M. E. .....Rochester
Murphy, M. H.....Rochester
Murray, R. A. .....Hibbing
Murray, R. A. .....Rochester
Musachio, N. F.....Foley
Musgrove, J. E. .....Rochester
Mussey, Mary E. .....Rochester
Mussey, R. D. .....Rochester
Mussey, Robert D., Jr. ....Rochester
†Musty, N. J. .....Minneapolis
Myers, J. A. .....Minneapolis
Myers, T. T.....Rochester
Myre, C. R. .....Paynesville

Nachtwey, Robert A.....Rochester
Naegeli, A. E. .....St. Paul
Naegeli, Frank.....Fergus Falls
Nagel, H. D. .....Waconia
Nash, L. A. .....St. Paul
Naslund, A. W. .....Minneapolis
Nauth, B. S. .....Winona
Navratil, D. R. .....Montgomery
Neal, J. M. .....Minneapolis
Nealy, D. E. .....Adrian
Neary, R. P. .....Minneapolis
Neel, H. B. .....Albert Lea
Neff, W. S. .....Virginia
Nehring, J. P. .....Preston
Neibling, H. A.....California
Nelson, A. S. ....Thief River Falls
Nelson, Bernette G. .....Menagha
Nelson, Bernice A. .....Northome
Nelson, C. E. J. .....Albert Lea
Nelson, C. G.....Harmony
Nelson, E. H. .....Chisholm
Nelson, E. J. .....Owatonna
Nelson, E. N. .....Minneapolis
Nelson, G. E.....Fairfax
Nelson, H. E.....Crookston
†Nelson, H. S. ....Los Angeles, Calif.
Nelson, K. L. .....Clara City
Nelson, L. A. .....St. Paul
Nelson, L. S. .....Hibbing
Nelson, M. C. .....Minneapolis
Nelson, M. S. .....Granite Falls
Nelson, N. H. .....Minneapolis
Nelson, N. P. .....Brainerd
Nelson, O. L. N. .....Minneapolis
Nelson, R. A. .....Fergus Falls
Nelson, R. L. .....Duluth
Nelson, W. I. .....Minneapolis
Nelson, W. O. B. .....Fergus Falls
Nesbitt, Samuel.....Minneapolis
Nesheim, M. O. .....Emmons
Nessa, C. B. .....St. Cloud
Nesset, L. B. .....Minneapolis
Neumaier, Arthur .....Glencoe
Neumann, C. A. .....Winona
New, G. B. .....Rochester
*Nichols, A. E.....St. Paul
Nichols, D. R. .....Rochester
Nicholson, M. A. .....Duluth
Nickerson, J. R. .....Heron Lake
‡Nickeson, R. W. .....Rochester
Nielson, A. M. .....Northfield
Nietfeld, A. B. .....Warren
Nilson, H. J. .....North Mankato
Ninneman, N. N. .....Waconia
Nix, J. T. .....Rochester
Nixon, J. B. .....Crosby
Nixon, R. R. .....Rochester
Noble, J. F. .....St. Paul
Noble, J. L. .....St. Paul
Nolan, D. E. .....Dayton, Ohio
Noonan, W. J. .....Minneapolis
Noran, A. S. N.....Minneapolis
Noran, H. H. .....Minneapolis
Norberg, C. E. .....Cloquet
Nord, R. E. .....Minneapolis
Nordin, G. T. .....Minneapolis
Nordland, M. A.....Rochester
Nordland, Martin.....Minneapolis
Nordman, W. F.....Mora
Norley, Theo.....Pa.
Norman, J. F. .....Crookston
Norris, N. T. .....Caledonia
†Noth, H. W.....Minneapolis
Novak, E. E. .....New Prague
Norval, M. A. .....Rochester
Nuebel, C. J.....Hudson, Wisconsin
Nuessle, W. G. .....Springfield
Nuetzman, A. W. .....Faribault
Nutting, R. E. .....Duluth
Nydahl, M. J. .....Minneapolis
Nye, Katherine A. .....St. Paul
Nye, Lillian L. .....St. Paul
Nygren, W. T. .....Braham
Nylander, E. G. .....Minneapolis
Nystrom, Ruth G. .....Minneapolis

Oberg, C. M. .....Minneapolis
O'Brien, L. T. .....Breckenridge
*†O'Brien, W. A.....Minneapolis
O'Brien, W. M. .....St. Paul
Ochsnner, C. G. .....Wabasha
Ockuly, Orville.....St. Paul
O'Connor, D. C. .....Eden Valley
O'Connor, L. J. .....St. Paul
Odel, H. M. .....Rochester
Odessky, Louis ..Staten Island, N. Y.
O'Donnell, D. M. .....Ortonville
O'Donnell, J. E. .....Minneapolis
Oeljen, S. C. G. .....Waseca
*Oerting, H.....St. Paul
Ogden, Warner .....St. Paul
Ohage, Justus, Jr. .....St. Paul
O'Hanlon, J. A. .....Lindstrom
O'Kane, T. W. .....St. Paul
O'Keefe, J. P. .....St. Cloud
Olcott, E. D. .....Rochester
Olds, G. H. .....New Richland
O'Leary, J. H.....Foley
O'Leary, P. A. .....Rochester
Oliver, I. L. .....Graceville
Oliver, James .....Moorhead
Olmanson, E. G. .....St. Peter
Olsen, A. M. .....Rochester
Olsen, E. G.....Minneapolis
Olsen, R. L. .....St. Paul
Olsen, Gertrude E. .....Georgetown
Olson, A. C. .....Minneapolis
Olson, A. E. .....Duluth
Olson, A. J.....Owatonna
Olson, A. O. .....Duluth
Olson, C. A. .....St. Paul
Olson, C. J. .....Belle Plaine
Olson, D. O. C. .....Gaylord
Olson, E. A. .....Pine Island
Olson, G. E. .....West Concord
Olson, J. W. .....Minneapolis
†Olson, O. A. .....Minneapolis
*†Olson, R. G.....Minneapolis
Olson, S. W. .....Rochester
O'Neal, Ruth .....Rochester
Onsgard, L. K. .....Houston
Oppegaard, C. L. .....Crookston
Oppegaard, M. O. .....Crookston
Oppen, E. G. .....Minneapolis
O'Reilley, B. E. .....St. Paul
Osborn, J. E.....Rochester
Ostergaard, Erling.....Evansville
Ostergren, E. W. .....St. Paul
Otto, H. C. .....Frazee
Ouellette, A. J. .....St. Paul
Owen, C. A. J.....Rochester
Owens, W. A. .....Montevideo
†Owre, Oscar .....Minneapolis

Paalman, R. J. .....Rochester
Page, R. L. .....St. Charles
Painter, R. C. .....Rochester
Palazzo, F. A.....Rochester
Palen, B. J. .....Minneapolis
Palmer, C. F. .....Albert Lea
Palmer, H. A. .....Blackduck
Palmerton, E. S. .....Albert Lea
Pankratz, P. J. ....Mountain Lake
Papermaster, R.....Two Harbors
Parke, F. F. .....Rochester
†Parker, O. W. .....Duluth
Parker, H. L. .....Rochester
Parker, R. L. .....Rochester
Parker, W. E. .....Sebeka
Parker, W. H. .....Chisholm
Parkhill, Edith M. .....Rochester
Parkin, T. W. .....Rochester
Parkinson, Dwight.....Rochester
Parson, E. I.....Duluth
Parson, Lillian B. .....Elbow Lake

Parson, L. R. ..... Elbow Lake
Parsons, R. L. ..... Monterey
Paschall, Jack, Jr. ..... Rochester
Pasek, A. W. ..... Cloquet
Passer, A. A. ..... Olivia
Patch, O. B. ..... Duluth
Patterson, H. D. ..... Slayton
Parsons, J. G. ..... Crookston
Patterson, S. A. ..... Pennsylvania
Patterson, W. L. ..... Fergus Falls
Paulson, E. C. ..... Elbow Lake
Paulson, J. A. ..... Rochester
Paulson, T. S. ..... Fergus Falls
Pearsall, R. P. ..... Virginia
Pearson, B. F. ..... Shakopee
Pearson, C. C. ..... Rochester
Pearson, F. R. ..... St. Paul
Pearson, L. O. ..... Warroad
Pearson, M. M. ..... St. Paul
Pearson, R. T. ..... Shakopee
Pease, Gertrude L. ..... Rochester
*Peck, L. D. ..... Hastings
Pedersen, A. H. ..... St. Paul
Pedersen, R. C. ..... Duluth
Pemberton, J. deJ. ..... Rochester
Pender, J. W. ..... Rochester
Penhall, F. W. ..... Willmar
Penk, E. L. ..... Springfield
Penn, G. E. ..... Mankato
Pennie, D. F. ..... Duluth
Peppard, T. A. ..... Minneapolis
Perkins, R. F. ..... Rochester
Perlman, E. C. ..... Minneapolis
*Perry, C. G. ..... St. Paul
Perry, E. L. ..... Rochester
Person, J. P. ..... Albert Lea
Pertl, A. L. ..... Canby
Peters, G. A. ..... Rochester
Petersen, D. H. ..... Northfield
Petersen, G. L. ..... Minneapolis
†Petersen, J. R. ..... Minneapolis
Petersen, M. C. ..... Rochester
Petersen, R. T. ..... St. Cloud
Peterson, C. A. ..... Minneapolis
Peterson, D. B. ..... St. Paul
Peterson, F. N. ..... Virginia
Peterson, H. O. ..... St. Paul
Peterson, H. W. ..... Minneapolis
Peterson, J. L. E. ..... St. Paul
Peterson, J. H. ..... Minneapolis
Peterson, J. R. ..... Rochester
Peterson, K. H. ..... Hutchinson
Peterson, L. J. ..... Minneapolis
Peterson, N. P. ..... Minneapolis
Peterson, O. L. ..... Cokato
Peterson, O. H. ..... Minneapolis
Peterson, P. E. ..... Minneapolis
Peterson, R. A. ..... Vesta
Peterson, W. C. ..... Minneapolis
Peterson, W. E. ..... Willmar
Peterson, W. Henry ..... Minneapolis
Petit, J. V. ..... Minneapolis
Petit, L. J. ..... Minneapolis
Petraborg, H. T. ..... Aitkin
Pewters, J. T. ..... Minneapolis
Peyton, W. T. ..... Minneapolis
Pfuetze, K. H. ..... Cannon Falls
Pfunder, M. C. ..... Minneapolis
Phelps, K. A. ..... Minneapolis
Phillips, S. K. ..... Rochester
Pierce, C. H. ..... Wadena
Pierson, R. F. ..... Slayton
Piper, M. C. ..... Rochester
Piper, W. A. ..... Mountain Lake
Plass, H. F. R. ..... Minneapolis
Platou, E. S. ..... Minneapolis
Pleissner, K. W. ..... St. Louis Park
Plimpton, N. C., Jr. ..... Minneapolis
Plondke, F. J. ..... St. Paul
Plummer, W. A. ..... Rochester
Pohl, J. F. M. ..... Minneapolis
Poirier, J. A. ..... Forest Lake
Pollack, A. A. ..... Rochester
Pollard, D. W. ..... Minneapolis
Pollard, W. H., Jr. ..... Duluth
Polley, H. F. ..... Rochester
Pollock, D. K. ..... Minneapolis
Polzak, J. A. ..... Minneapolis
Ponterio, J. E. ..... Shakopee
Pool, T. L. ..... Rochester
Poore, T. N. ..... Rochester
Popp, W. C. ..... Rochester
Poppe, F. H. ..... Minneapolis
Porter, C. B. ..... Rochester
Porter, O. M. ..... Willmar
Potek, D. M. ..... International Falls
Potter, R. B. ..... Minneapolis
Potter, R. T. ..... Rochester
Potthoff, C. J. ..... Washington, D. C.
Power, J. E. ..... Duluth
Powers, F. H. ..... Rochester
Prangen, A. D. ..... Rochester
Pratt, J. H., Jr. ..... Rochester
†Pratt, Fred J., Sr. ..... Minneapolis
Pratt, F. J., Jr. ..... Minneapolis
Pratt, W. C. ..... Rochester
Preine, L. A. ..... Minneapolis
Preisinger, J. W. ..... Renville
Prendergast, H. J. ..... St. Paul
Preston, P. J. ..... Minneapolis
Prickman, L. E. ..... Rochester
Pridgen, J. E. ..... Rochester
Priest, R. E. ..... Minneapolis
Priestly, J. T. ..... Rochester
Prim, J. A. ..... Minneapolis
Prins, L. R. ..... Albert Lea
Proeschel, R. K. ..... Willmar
Proffitt, W. E. ..... Minneapolis
Proshek, C. E. ..... Minneapolis
Prough, W. A. ..... Rochester
Pruitt, R. D. ..... Rochester
Pugh, D. G. ..... Rochester
Purves, G. H. ..... Hendricks
Pumula, E. E. ..... Warren
Putman, H. C., Jr. ..... Rochester
Puumala, R. H. ..... Cloquet
Pyle, Marjorie M ..... Rochester

Quanstrom, V. E. ..... Brainerd
Quattlebaum, Frank ..... St. Paul
Quello, R. O. B. ..... Minneapolis
Quist, H. W. ..... Minneapolis
Quist, H. W., Jr. ..... Minneapolis

Raadquist, C. S. ..... Hibbing
Radabaugh, R. C. ..... Hastings
Raetz, S. J. ..... Maple Lake
Raihala, John ..... Virginia
Raiter, R. F. ..... Cloquet
Ralph, J. R. ..... St. Paul
Ralston, D. E. ..... Rochester
Ramsey, W. H., II ..... Rochester
†Ramsey, W. R. ..... St. Paul
Randall, A. M. ..... Ashby
Randall, L. M. ..... Rochester
Rang, R. H. ..... Rochester
Ransom, H. R. ..... Osseo
Ransom, M. L. ..... Hancock
Rasmussen, R. C. ..... St. Paul
Rasmussen, W. C. ..... Rochester
Raszkowski, H. J. ..... Frederic, Wisconsin
†Ratcliffe, J. J. ..... Aitkin
Rea, C. E. ..... St. Paul
Reader, D. R. ..... Minneapolis
Reed, Paul ..... Virginia
Reeve, E. T. ..... Elbow Lake
Reff, A. R. ..... Crookston
Regan, J. J. ..... Minneapolis
Regnier, E. A. ..... Minneapolis
Reid, J. W. ..... St. Paul
Reid, L. M. ..... Excelsior
Reif, H. A. ..... Minneapolis
Reif, H. J. ..... St. Cloud
Reiley, R. E. ..... Minneapolis
†Reineke, G. F. ..... New Ulm
*†Reiter, W. H. ..... Shakopee
Reitmann, J. H. ..... Hastings
ReMine, W. H., Jr. ..... Rochester
Remington, J. H. ..... Rochester
Remsberg, R. R. ..... Tracy
Replogle, W. H. ..... Los Angeles, Cal.
Reynolds, J. L. ..... Rochester
Reynolds, J. S. ..... Minneapolis
Rice, C. O. ..... Minneapolis
Rice, H. G. ..... Aitkin
Rice, R. R. ..... Rochester
Richards, E. T. F. ..... St. Paul
Richards, W. B. ..... St. Cloud
Richardson, H. E. ..... St. Paul
Richardson, R. J. ..... St. Paul
Richdorf, L. F. ..... Minneapolis
Rick, P. F. W. ..... St. Paul
Ricks, H. C., Jr. ..... Rochester
Ridgway, A. M. ..... Annandale
Ridley, R. W. ..... Rochester
Riegel, G. S. ..... Taylors Falls
Rieke, W. W. ..... Wayzata
Rigler, L. G. ..... Minneapolis
Rinehart, R. E. ..... Wheeler, Oregon
Ringle, O. F. ..... Walker
Rinkey, Eugene ..... St. Paul
Riordan, Elsie M. ..... Minneapolis
Ripple, R. J. ..... New London
Risch, R. E. ..... Minneapolis
Risser, A. F. ..... Stewartville
Ritchie, W. P. ..... St. Paul
Ritt, A. E. ..... St. Paul
Rivers, A. B. ..... Rochester
Rizer, D. K. ..... Minneapolis
Rizer, R. I. ..... Minneapolis
Roan, O. M. ..... Minneapolis
Robb, E. F. ..... Minneapolis
†Robbins, C. P. ..... Winona
Robbins, O. F. ..... Minneapolis
Roberts, L. J. ..... Minneapolis
Roberts, N. J. ..... Rochester
Roberts, O. W. ..... Owatonna
Roberts, S. W. ..... Minneapolis
Roberts, W. B. ..... Minneapolis
†Robertson, J. B. ..... Minneapolis
Robertson, P. A. ..... Austin
Robilliard, C. M. ..... Faribault
†Robinson, J. M. ..... Goshen, N. Y.
*Robitshek, E. C. ..... Minneapolis
Rockwood, Philo H. ..... Fergus Falls
Rodda, F. C. ..... Minneapolis
Rodgers, C. L. ..... Minneapolis
Rodgers, R. S. ..... Minneapolis
Rodwell, T. F. ..... Mahnomen
Roehlke, A. B. ..... Elk River
Roemer, H. J. ..... Winona
Rogers, C. W. ..... Winona
Rogers, J. D. ..... Rochester
Rogers, S. F. ..... St. Paul
Rogne, W. G. ..... Spring Grove
Roholt, C. L. ..... Waverly
Roholt, H. B. ..... Waverly
Rohrer, C. A. ..... Waterville
Rokala, H. E. ..... Virginia
Rolig, D. H. ..... St. Paul
†Rood, D. C. ..... Duluth
Rose, J. T. ..... Lakefield
Rosenbaum, E. E. ..... Rochester
Rosendahl, F. G. ..... Minneapolis
Rosenfield, A. B. ..... Minneapolis
Rosenholtz, Burton ..... St. Paul
Rosenthal, F. H. ..... Austin
Rosenthal, Robert ..... St. Paul
Rosenwald, R. M. ..... Minneapolis
Roskilly, G. C. P. ..... Minneapolis
Ross, A. J. ..... Minneapolis
Rossberg, R. A. ..... Morris
Rossen, R. X. ..... Hastings
Roth, F. D. ..... Lewiston
Roth, G. C. ..... St. Paul
Rothschild, H. J. ..... St. Paul
Roust, H. A. ..... Montevideo
Routley, E. F. ..... Rochester
‡Rovelstad, R. A. ..... Northfield
Rowe, O. W. ..... Duluth
Rowe, W. H. ..... Fairmont
Rowles, E. K. ..... Coleraine
Roy, P. C. ..... St. Paul
Rucker, C. W. ..... Rochester
Rucker, W. H. ..... Minneapolis
Rud, N. E. ..... Minneapolis
Rudell, G. L. ..... Minneapolis
Rudie, P. S. ..... Duluth
Ruff, C. C. ..... Rochester
Ruggles, G. M. ..... Forest Lake
†Ruhberg, G. N. ..... St. Paul
Rulison, E. T., Jr. ..... Rochester
Rumpf, C. W. ..... Faribault
†Rumpf, W. H. ..... Faribault
Russ, H. H. ..... Blue Earth
Russeth, A. N. ..... Minneapolis
Rusten, E. M. ..... Minneapolis
Rutherford, W. C. ..... Nisswa
Rutledge, L. H. ..... Detroit Lakes
Ryan, J. D. ..... St. Paul
Ryan, J. J. ..... St. Paul
Ryan, J. M. ..... St. Paul
Ryan, M. E. ..... St. Paul
Ryan, W. J. ..... Duluth
Rydburg, W. C. ..... Brooten
Rydell, J. R. ..... Rochester
Ryding, V. T. ..... Howard Lake
Rydland, A. D. ..... Crookston
Rygh, H. N. ..... Atwater
Rynearson, E. H. ..... Rochester

Sach-Rowitz, Alvan ..... Moose Lake
Sadler W. P., Jr. ..... Minneapolis
Saffert, C. A. ..... New Ulm
Sahr, W. G. C. ..... Hutchinson
St. Cyr, K. J. ..... Robbinsdale
Salassa, R. M. ..... Rochester
Salterman, B. I. ..... Minneapolis
Salter, R. A. ..... Virginia
Samson, E. R. ..... Stillwater
Samuelson, L. G. ..... Mankato
Samuelson, Samuel ..... Minneapolis
Sandell, S. T. ..... Nopeming
Sanderson, A. G. ..... Deerwood
†Sanderson, E. T. ..... Alexandria
Sandt, K. E. ..... Minneapolis
Sandven, N. O. ..... Paynesville
Sanford, A. H. ..... Rochester
Sanford, J. A. ..... Farmington
Sanford, R. A. ..... Rochester
Sarff, O. E. ..... Duluth
Satersmoen, Theodore. ..Pelican Rapids
Sather, Allen ..... Fosston
Sather, E. R. ..... Alexandria
Sather, G. A. ..... Fosston
Sather, R. N. ..... Mora
Sather, R. O. ..... Crookston
Satterlee, H. W. ..... Lewiston
Satterlund, V. L. ..... St. Paul
Sauer, W. G. ..... Rochester
Savage F. J. ..... St. Paul
Sawatzky, W. A. ..... Minneapolis
Sax, M. H. ..... Duluth
Sax, S. G. ..... Duluth
Saylor, H. L. ..... Rochester
Sayre, G. P. ..... Rochester

Scandalis, P. R.....Rochester
Scanlon, R. L. .....Rochester
Schaaf, F. H. K.....Minneapolis
Schade, F. L.....Worthington
Schaefer, J. F.....Owatonna
Schaefer, Samuel .....Winona
Schaefer, W. G.....Minneapolis
Schafer, L. A. .....Rochester
Schamber, W. F.....Parkers Prairie
Schatz, F. J.....St. Cloud
Scheifley, C. H.....Rochester
†Scheldrup, N. H.....Minneapolis
Scherer, L. R.....Minneapolis
Schiele, B. C.....Minneapolis
Schimelpfenig, G. T.....Chaska
Schlesselman, G. H.....Anoka
Schlesselman, J. T.....Mankato
Schlotter, D. C.....Rochester
Schmidt, G. F.....Minneapolis
Schmidt, H. R.....Winona
Schmidt, H. W.....Rochester
†Schmidt, Paul A.....Good Thunder
Schmidt, P. G., Jr.....Granite Falls
Schmidt, W. R.....Worthington
Schmidtke, R. L.....St. Paul
*†Schmitt, A. F.....Minneapolis
†Schmitt, S. C.....Los Angeles, Calif.
Schmitz, A. A.....Mankato
Schmitz, E. J.....Holdingford
†Schneider, J. P.....Minneapolis
Schneider, L. E.....Duluth
Schneider, P. J.....Adams
Schneider, R. A.....Minneapolis
†Schneidman, N. R.....Minneapolis
Schoch, R. B. J.....St. Paul
Scholpp, O. W.....Hutchinson
Scholten, R. A.....Rochester
Schons, Edward.....St. Paul
Schottler, G. J.....Dexter
Schottler, M. E.....Minneapolis
Schroder, C. H.....Duluth
Schroeckenstein, H. F.....St. Paul
Schroeppel, J. E. .....Winthrop
†Schuldt, F. C.....St. Paul
Schultz, J. A.....Albert Lea
Schultz, J. H.....Minneapolis
Schultz, P. J.....Minneapolis
Schulze, A. G.....St. Paul
†Schussler, O. F.....Minneapolis
Schutz, E. S.....Mountain Lake
Schwartz, V. J.....Minneapolis
Schweiger, T. R.....Hibbing
†Schwyzer, Gustav.....Minneapolis
Schwyzer, H. C.....St. Paul
†Scofield, C. L.....Benson
Scott, E. E.....St. Paul
†Scott, F. H.....Minneapolis
Scott, H. G.....Minneapolis
Seaberg, J. A. .....Minneapolis
†Seashore, Gilbert.....Minneapolis
Seashore, R. T.....Duluth
Seebach, L. M.....Minneapolis
Seham, Max.....Minneapolis
Seifert, M. H.....Excelsior
Seifert, O. J.....New Ulm
Seiler, H. H. .....Rochester
Seitz, S. B.....Barnesville
Sekhan, M. S.....St. Paul
Seldon, T. H.....Rochester
Seljeskog, S. R.....Minneapolis
Sellers, G. K. .....Dassel
Selmo, J. D.....Norwood
†Senkler, G. E.....St. Paul
Senn, E. W.....Owatonna
Sether, A. F. .....Ruthton
Setzer, H. J.....St. Paul
Seybold, W. D.....Rochester
Shanlorf, J. F.....Minneapolis
Shannon, W. R.....St. Paul
Shaperman, Eva P.....Minneapolis
Shapiro, M. J.....Minneapolis
Sharp, D. V.....Minneapolis
Shaw, A. W.....Virginia
Shaw, H. A. .....Minneapolis
Shea, A. W.....Minneapolis
Shedlov, Abraham.....Fosston
Sheedy, C. L.....Austin
Sheehan, J. R.....St. Paul
Shellito, J. G. .....Rochester
†Shellman, J. L.....
Pacific Palisades, Calif.
Sheppard, C. G. .....Hutchinson
Sher, D. A.....Virginia
Sher, Lewis.....Minneapolis
Sheridan, Viola E. .....Rochester
Sherman, A. G.....St. Peter
Sherman, C. H.....Bayport
Sherman, C. L.....Luverne
Sherman, H. T.....Cambridge
Sherman, R. V.....Red Wing
Sherwood, G. E.....Kimball
Shick, R. M.....Rochester
Shimonek, S. W.....St. Paul
Shonyo, E. S.....Utah
Short, C. A., Jr. .....Rochester
Short, Jacob.....St. Paul
Shullenberger, C. C.....Rochester
Siegel, Clarence.....St. Paul
Siegel, J. S.....Virginia
Siegmann, W. C.....Minneapolis
Silver, J. D.....Minneapolis
Simison, Carl .....Barnesville
Simons, B. H.....Chaska
Simons, E. J.....Swanville
†Simons, J. H.....Minneapolis
Simons, L. T.....St. Paul
Simonson, D. B.....Minneapolis
Simonton, K. MacL. .....Rochester
Simpson, E. DeW. .....Minneapolis
Sinamark, Andrew.....Hibbing
Singer, B. J.....St. Paul
Sinykin, M. B.....Minneapolis
Siperstein, D. M. .....Minneapolis
Sisk, H. E.....Hastings
Sisler, C. E.....Grand Rapids
Sivertsen, A.....Mound
Sivertsen, Ivar.....Minneapolis
Sjoding, J. D.....Mankato
Siostrom, L. E.....St. Peter
Skaug, H. M.....Chatfield
‡Skillern, P. G., Jr.....Rochester
†Skinner, H. O.....St. Paul
Skjold, A. C.....Minneapolis
Skragg, H.....Elmore
Skroch, E. E. .....Rochester
Slater, S. A.....Worthington
Slaughter, O. L. .....Rochester
Sloan, W. P.....Rochester
Slocumb, C. H.....Rochester
Smisek, E. A.....St. Paul
Smisek, F. M. E.....Minneapolis
Smith, Adam M.....Minneapolis
Smith, Archie M.....Minneapolis
Smith, B. A.....Crosby
Smith, Baxter A., Jr. ....Minneapolis
Smith, C. M.....Duluth
Smith, D. E.....Rochester
Smith, F. L.....Rochester
Smith, F. R. .....Rochester
Smith, H. L.....Rochester
Smith, H. R.....Minneapolis
Smith, L. G.....Montevideo
Smith, L. A.....Balaton
Smith, L. A.....Rochester
†Smith, M. W.....Red Wing
Smith, N. D.....Rochester
Smith, N. M.....Minneapolis
Smith, N. R.....Minneapolis
Smith, O. O., Jr. .....Rochester
Smith, P. M.....Lake Crystal
Smith, V. D. E.....St. Paul
Smith, W. R.....Grand Marais
Snell, A. M.....Rochester
Snider, G. G.....Rochester
Snyder, C. D. .....Kiester
Snyder, G. W.....St. Paul
Snyker, O. E.....Ely
Soderlind, R. T.....Minneapolis
Sogge, L. L.....Windom
Sohlberg, O. I.....St. Paul
Sohmer, A. E.....Mankato
Solhaug, Sam B., Jr.....Appleton
Solhaug, S. B.....Minneapolis
Solsem, F. N. S.....Ah-Gwah-Ching
Sommers, Ben.....St. Paul
Sonnesyn, N. N.....Le Sueur
Sorem, M. B.....St. Paul
Sorum, F. T.....Jasper
Soucheray, P. H.....St. Paul
Souster, B. B.....St. Paul
Spang, A. J.....Duluth
Spang, J. S.....Duluth
Spano, J. P.....Minneapolis
Spar, A. A.....Rochester
Spaulding, C. A.....Rochester
Spear, R. C.....Rochester
Spencer, J. R.....Rochester
Spicer, F. W.....Duluth
Spink, W. W.....Minneapolis
Sprafka, J. M.....St. Paul
Sprague, R. G.....Rochester
Spratt, C. N.....Minneapolis
‡Spray, Paul.....Rochester
Spurbeck, R. G.....Cloquet
Spurzem, R. J.....Anoka
Stafford, C. E.....Baudette
Stahr, A. C.....Hopkins
Stam, John .....Worthington
Stanford, C. E.....Minneapolis
Stangl, P. E.....St. Cloud
Stanley, C. R.....Worthington
Starekow, M. D. ..Thief River Falls
Stark, D. B. .....Rochester
Stark, F. M.....Rochester
‡Starks, W. O.....Rochester
State, David .....Minneapolis
Stauffer, M. H.....Rochester
Steffens, L. A.....Red Wing
Stein, K. E.....Lakeville
Stein, R. J.....Pierz
Steinberg, C. L.....St. Paul
Steiner, I. W.....Winona
Stelter, L. A.....Minneapolis
Stemsrud, H. L.....Alexandria
Stenerodden, S. C.....St. Cloud
Stennes, J. L. .....Minneapolis
Stensgaard, K. L. ..Thief River Falls
Stenstrom, Annette E. T..Minneapolis
Stephan, E. L.....Hinckley
Sterner, E. G.....St. Paul
Sterner, E. R.....St. Paul
Sterner, J. J.....St. Paul
Sterner, O. W.....St. Paul
Stevens, J. E., Jr. .....Rochester
*Stevens, J.....Gonvick
Stevenson, B. M. .....Fulda
Stevenson, F. W.....Faribault
Stewart, Alexander .....St. Paul
Stewart, D. E.....St. Paul
Stewart, N. E...St. Petersburg, Fla.
Steward, R. I. .....Minneapolis
Stickney, J. M.....Rochester
Stillwell, W. C.....Mankato
Stillwell, G. G.....Rochester
Stokes, G. D.....Rochester
Stoesser, A. V.....Minneapolis
Stolpestad, A. H.....St. Paul
Stolpestad, H. L. .....St. Paul
†Stomel, Joseph....Los Angeles, Calif.
Stone, N. F.....Mankato
Stone, S. P.....Minneapolis
Storrs, R. P.....Rochester
†Strachauer, A. C.....Minneapolis
Stransky, T. W.....Owatonna
Strate, G. E.....St. Paul
Strathern, C. S.....St. Peter
Strathern, F. P.....St. Peter
Strathern, M. L.....Gilbert
Stratte, A. K.....Pine City
Stratte, H. C. ..... Windom
Straus, M. L.....St. Paul
Strauss, E. C. .....Duluth
Street, Bernard .....Northfield
Strem, E. L.....St. Paul
Strobel, W. G.....Duluth
Stroebel, C. F., Jr. .....Rochester
Strom, G. W. .....Minneapolis
Stromgren, D. T. .....Minneapolis
Stromme, W. B. .....Minneapolis
Strout, G. E.....Minneapolis
Stuart, A. B.....Cloquet
Stuart, R. L.....Rochester
Studer, D. J.....Faribault
Stuhr, J. W.....Stillwater
Sturley, R. F. .....St. Paul
Sturre, J. R.....Minneapolis
Sukov, Marvin .....Minneapolis
Sullivan, R. M.....Minneapolis
Sundberg, Carol L.....Rochester
†Sutherland, C. G.....Rochester
Sutherland, H. N.....Ely
Sutton, H. R.....Hoffman
Svien, H. J.....Rochester
Swanson, J. A.....St. Paul
Swanson, R. E.....Minneapolis
Swanson, R. R.....Albert Lea
Swanson, V. F.....Minneapolis
Swedberg, W. A.....Duluth
Swedenburg, P. A. .....Glenwood
Sweeney, A. R., Jr.....Rochester
Sweetser, H. B., Jr.....Minneapolis
†Sweetser, H. B., Sr.....Minneapolis
Sweetser, T. H.....Minneapolis
Sweitzer, S. E.....Minneapolis
†Swendseen, C. G.....Minneapolis
Swendson, J. J.....St. Paul
Swensen, R. G.....North Branch
Swenson, A. O.....Duluth
Swenson, O. J.....Waseca
Swezey, B. F.....Buffalo

Tangen, G. M.....Minneapolis
Tanquist, E. J.....Alexandria
Taylor, B. E.....Rochester
Taylor, C. W.....Duluth
Taylor, J. H.....Minneapolis
Teich, K. W. .....Duluth
Teisberg, C. B.....St. Paul
Teisberg, J. E. .....St. Paul
Telford, V. J.....Litchfield
Tenner, R. J.....Minneapolis
Terrell, B. J.....Nopeming
Tesch, G. H.....Elk River
Thabes, J. A.....Brainerd
Thabes, J. A., Jr.....Brainerd
Thayer, E. A. .....Fairmont
Thielen, R. D. .....St. Michael
Thom, J. G.....Rochester
Thomas, G. F.....Minneapolis
Thomas, G. H.....Minneapolis
Thompson, Arthur .....Cokato
Thompson, C. O.....Hendricks
Thompson, F. A.....St. Paul
†Thompson, G. J.....Rochester
Thompson, H. B.....Fergus Falls

Thompson, V. C. . . Marine-on-St. Croix
Thompson, W. H. . . . . Minneapolis
Thomson, J. M. . . . . Minneapolis
Thoreson, M. C. Bernice . . So. St. Paul
Thysell, D. M. . . . . Minneapolis
Thysell, F. A. . . . . Moorhead
Thysell, V. D. . . . . Hawley
Tibbetts, M. H. . . . . Duluth
Tifft, C. R. . . . . St. Paul
Tilderquist, D. L. . . . . Duluth
Tillisch, J. H. . . . . Rochester
Tingdale, A. C. . . . . Minneapolis
Tingdale, Carlyle . . . . . Hibbing
Tinkham, R. G. . . . . Minneapolis
Titrud, L. A. . . . . **Minneapolis**
Tobin, J. D. . . . . Minneapolis
Tobin, J. R., Jr. . . . . Rochester
Todd, R. L. . . . . Minneapolis
Tompkins, S. F. . . . . Rochester
Tondreau, R. L. . . . . Rochester
Tosseland, N. E. . . . . Rochester
Trach, B. B. . . . . Minneapolis
Tracht, R. R. . . . . St. Paul
Traeger, C. A. . . . . Faribault
Travis, J. S. . . . . St. Paul
Traxler, J. F. . . . . Henderson
Tregilgas, H. R. . . . . So. St. Paul
Trommald, G. B. K. . . . . Anoka
Troost, H. B. . . . . Mankato
Trow, J. E. . . . . Minneapolis
Trow, W. H. . . . . Minneapolis
Troxil, Elizabeth . . . . . Minneapolis
Trueman, H. S. . . . . Minneapolis
Truesdale, C. W. . . . . Glencoe
Trutna, T. J. . . . . Silver Lake
Tucker, W. B. . . . . Minneapolis
Tudor, R. B. . . . . Minneapolis
Tunstead, H. J. . . . . Minneapolis
Tuohy, E. L. . . . . Duluth
Turbak, C. E. . . . . Herman
†Turnacliff, D. D. . . . . St. Paul
Tweedy, Geo. J. . . . . Winona
Tweedy, J. A. . . . . Winona
Tweedy, R. B. . . . . Winona
Tyler, S. H. . . . . Raymond

Ude, W. H. . . . . Minneapolis
Uhler, W. M. . . . . Rochester
Uhley, C. G. . . . . Crookston
Uihlein, Alfred . . . . . Rochester
Ulrich, H. L. . . . . Minneapolis
Underdahl, L. O. . . . . Rochester
Undine, C. A. . . . . Minneapolis
Upshaw, Betty Y. . . . . Rochester
Upshaw, J. E. . . . . Rochester
Urberg, S. E. . . . . Duluth

Vadheim, A. L. . . . . Tyler
Valentine, W. H. . . . . Tracy
Van Cleve, H. P., Jr. . . Dodge Center
Vandersluis, C. W. . . . . Bemidji
Van Herik, Martin . . . . . Rochester
Van Meier, Henry . . . . . Stillwater
Van Rooy, G. T. . . Thief River Falls
Van Ryzin, D. J. . . . . Duluth
Van Valkenberg, J. D. . . . . Floodwood
Varco, R. L. . . . . St. Paul
Vaughan, V. M. . . . . Truman
Vaughn, L. D. . . . . Rochester
Veirs, D. M. . . . . St. Paul
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Venables, A. E. . . . . St. Paul
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Vezina, J. C. . . . . Mapleton
Vik, A. E. . . . . Minneapolis
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*Vogel, J. H. . . . . New Ulm
Vollmer, F. J. . . . . Winona
Von der Weyer, W. H. . . . . St. Paul

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Wagener, H. P. . . . . Rochester
Wagner, N. W. . . . . Graceville
Wahlquist, H. F. . . . . Minneapolis
Wakim, Khalil G. . . . . Rochester
Wakefield, E. G. . . . . Rochester
Walch, A. E. . . . . Minneapolis
Waldron C. W. . . . . Minneapolis
Walfred, K. A. . . . . St. Cloud
†Walker, A. E. . . . . Duluth
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Walker, S. A. . . . . Minneapolis
Wall, C. R. . . . . Minneapolis
Wallace, M. O. . . . . Duluth
Waller, J. D. . . . . Pine City
Walsh, A. C. . . . . Rochester
Walsh, F. M. . . . . Minneapolis
Walsh, J. F. . . . . Olivia
Walsh, M. N. . . . . Rochester
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Walter, C. W. . . . . St. Paul
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Wang, J. C. . . . . Rochester
Wangensteen, O. H. . . . . Minneapolis
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Warren, C. A. . . . . St. Paul
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Watkins, C. H. . . . . Rochester
Watkins, D. H. . . . . Rochester
Watson, A. M. . . . . Royalton
Watson, C. G. . . . . Minneapolis
Watson, C. J. . . . . Minneapolis
†Watson, J. D. . . . . Minneapolis
Watson, P. T. . . . . Northfield
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Watson, R. M. . . . Thief River Falls
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Webber, F. L. . . . . St. Paul
Weber, H. M. . . . . Rochester
Weed, L. A. . . . . Rochester
Weir, J. F. . . . . Rochester
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Wellman, T. G. . . . . Lake City
Wellman, W. E. . . . . Rochester
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Wells, G. R. . . . . Rochester
Wells, J. J. . . . . Rochester
Wells, W. B. . . . . Jackson
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Wold, L. E. . . . . Rochester
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Wolkoff, H. J. . . . . St. Paul
Wollaeger, E. E. . . . . Rochester
Wolstan, , S. D. . . . . Minneota
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Ylvisaker, R. S. . . . . Minneapolis
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Youngren, E. R. . . . . St. Paul
Youngstrom, C. S. . . . . Ortonville

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Communications

LABORATORY SERVICE

To The Editor:

In the April (1948) issue of MINNESOTA MEDICINE appears a communication addressed to the Editor from Dr. C. J. Ehrenberg, commenting on the objections of the practicing clinical pathologists to a resolution approved by the House of Delegates of the Minnesota State Medical Association, petitioning the State Board of Health to include routine Rh typing in its laboratory service (see MINNESOTA MEDICINE, 31:81-82, January, 1948).

Dr. Ehrenberg intimates that the State Board of Health Laboratory would be doing only the typing of blood for Rh factor and no more. Experience has clearly shown that such a limit cannot be placed upon the State Board Laboratory, once the practice is sanctioned by the medical profession. Not only would the State Laboratory be willing and anxious to extend its facilities to include all phases of the complex Rh work, in which it is fully capable, but, I am afraid, the practicing physician would practically force it to render services connected with the Rh typing, such as the sensitization test, the Anti-Rh titre determination, as well as testing of blood of the husbands and children, for no other reason than that they are done free and thus "cushion" the cost of medical care.

Syphilis is a public health problem only in a limited sense. Personally, I believe, the medical profession with the existing private diagnostic facilities at its disposal, can and should control the spread of the disease. Free Wassermann testing was introduced as a war measure during World War I. In some states it was continued to benefit only the indigent. This was soon proved unworkable, since the doctors would have the test performed free, regardless of the patient's financial ability (and in some instances the doctors themselves appear to pocket the "fees" for the tests). Today, all state laboratories are doing, not only the serologic tests for syphilis, but in some instances, giving expert consultation service in diagnosis and treatment. The same trend would follow if we should let the State Board Laboratory take charge of the mere routine Rh test for married women.

It is well known that cancer diagnosis is the next target of the State Board of Health. Several states have already inaugurated this service free to all physicians.

Dr. Ehrenberg states, "Controversy as to the principle involved becomes trivial." The clinical pathologists, as practicing physicians, are fighting for the principle, which, to them and I hope to all thinking practitioners of medicine, is paramount in the issue. Once it is compromised, any and all phases of medical practice, be it clinical, diagnostic, or therapeutic, may and can be interpreted, as one chooses, as a public health or human problem "which transcends limited interest of the individual."

In the final disposal of the resolution, let the doctors decide on the merit of the principle involved which should govern their own practice, and not on the expediency which is another wedge into the gradually widening path leading to socialized medicine.

KANO IKEDA, M.D.

April 26, 1948.

BLUE CROSS-BLUE SHIELD NATIONAL ASSOCIATION

To the Editor:

In regard to the proposed Blue Cross-Blue Shield national organization which was discussed at the Blue Shield-Blue Cross conference in Los Angeles on March 30, the Minnesota Hospital Service Association had present its executive director and Minnesota Medical Service Inc., its executive director. Mr. F. Manley Brist, counsel for Minnesota Medical Service Inc., also attended and Dr. Adson from Rochester attended as a member of the Associated Medical Care Plans. Action taken regarding this national association was as follows:

"Following the motion passed at the joint session of the Blue Cross and Blue Shield Plans to the effect that there be established an effective and democratic association of Blue Cross and Blue Shield Plans to serve local Plans in the achievement of their fullest usefulness, your Committee has again considered the entire problem of a more effective association for facilitating and strengthening the work of the Blue Cross and Blue Shield Commissions.

"1. It is our recommendation to the Blue Cross and Blue Shield Commissions and to the Conferences of Blue Cross and Blue Shield Plans that an association be created, empowered to do any and all things necessary to serve the interest of the public and the Plans in providing prepayment facilities so that we may stimulate and put into effect a health program that will be to the benefit of the people of this country.

"2. We recommend that the present Commission structures be not disturbed at this time, and that a new *association* be formed which will supplement the work of the two Commissions.

"3. We recommend to the Blue Cross and Blue Shield Plans and to their respective Commissions that the two Commissions be directed to organize such an *association* at the earliest possible time and submit a written plan of operation to the respective Plans for approval within a six months' period.

"4. It is the unanimous judgment of your Committee that it would be desirable for the Commissions to consider the following basis of representation: The Board of Governors of the *Association* shall be composed of one Blue Cross Director, one Blue Cross Trustee, one Blue Shield Director and one Blue Shield Trustee elected from each of the twelve districts; there shall also be four representatives of the American Hospital Association and four representatives of the American Medical Association on the Board of Governors, the Board of Governors to serve one-third, one year, one-third, two years, and one-third, three years. It is also our judgment that in view of the fact that the Board of Governors will consist of fifty-six persons, a strong executive committee should be chosen to administer the work between meetings. We recommend that the

(Continued on Page 586)



"... a considerable reservoir of unsuspected and unreported amebiasis has been brought back to the United States...."[1]

Urging clinicians and roentgenologists to be on the alert for signs of this disease, Wilbur and Camp[2] note the frequency with which the radiologist finds unsuspected lesions, ultimately diagnosed as amebiasis.

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RESEARCH IN THE SERVICE OF MEDICINE

1. *Editorial: The Problem of Amebiasis, J.A.M.A.* 134:*1095 (July 26) 1947.*
2. *Wilbur, D. L., and Camp, J. D.: Amebic Disease of the Cecum: Clinical and Radiological Aspects, Gastroenterology* 7:*535 (Nov.) 1946.*
3. *Morton, T. C. St. C.: Diodoquin for Chronic Amoebic Dysentery in Service Personnel Invalided from India, Brit. M.J.* 1:*831 (June 16) 1945.*

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BLUE CROSS—BLUE SHIELD

(Continued from Page 584)

executive committee consist of the chief executive officer of the *association* and the officers of the *association,* who shall be elected annually by the governing board. In addition, the governing board shall elect annually additionl members of the executive committee up to a total of eleven. The members so elected must include one of the members of the Board of Governors representing the American Hospital Association and one of the members of the Board of Governors representing the American Medical Association and, exclusive of the chief executive officer and the American Hospital Association and American Medical Association representatives, consist of two Blue Cross Trustees, two Blue Cross Directors, two Blue Shield Trustees and two Blue Shield Directors. Not more than three members of the executive committee shall come from any one district.

"Among the purposes set forth for this association, as outlined above, there shall be included the organization of a national service agency or plan on a non-profit basis, to provide prepaid hospital and medical care, which will supplement coverage of Local Plans where desirable and which will provide coverage where no Blue Cross or Blue Shield Plan is available to national employers.

"Your Committee is in agreement that every effort must be made to maintain and protect individual Plan autonomy. The Committee believes that one of the greatest hazards to be faced in the establishment of our national association with a subsidiary non-profit Insurance Corporation is that the latter corporation might syphon off local business. Your Committee therefore recommends that the Insurance Corporation transmit all funds collected less reasonable operating expenses (to be determined by the Board of Governors) to the local Blue Cross or Blue Shield Plans. Each Plan would then provide all benefits to subscribers under its regular contract, and also administer the coverage (referred to above) made available through the Insurance Corporation. In this way, all local relations and contracts with hospitals and doctors would be maintained even though variations in benefits for national employers might be in effect. Under the proposal as submitted, each Plan will retain its own subscribers in national accounts. Each Plan will issue its own subscription agreements and deal with the subscribers enrolled through national employers as though no intermediary were employed except for payment of subscription rates."

Until the national association can be formulated and approved or disapproved by each individual Blue Cross Plan board of trustees and Blue Shield board of directors, the following action was taken in regard to Dr. Paul R. Hawley by the Joint Executive Committee of the Blue Cross and Blue Shield Commissions:

"Present.—J. Douglas Colman, Louis H. Pink, F. P. G. Lattner, Richard M. Jones, L. Howard Schriver, M.D., Barrett E. Nelson, M.D., Howard Hassard, Jay C. Ketchum, F. L. Feierabend, M.D., Frank E. Smith, and Paul R. Hawley, M.D.

"The meeting convened at 4:40 p.m., March 26, 1948, Mr. J. Douglas Colman serving as chairman of the meeting, having been chosen by lot. The immediate matters of joint interest to the Blue Cross and Blue Shield Commissions attendant upon Dr. Hawley's assumption of duties as chief executive officer were discussed at length by the group. It was agreed that the following recommendations would be made to the Blue Cross and Blue Shield Commissions by their respective executive committees in attendance at this meeting.

"1. That three members each from the executive committees of the Blue Cross Commission and Blue Shield Commission serve as the Joint Executive Committee to administer the joint undertakings of the two Commissions.

"2. Dr. Hawley will report to and be solely responsible to the Joint Executive Committee on all matters of joint concern to the Blue Cross and Blue Shield Commissions. He will be directly responsible to the Blue Cross and Blue Shield Commissions, respectively, only on such matters as in his judgment are of sole concern to either of these bodies.

"3. The directors of the Blue Cross and Blue Shield Commissions, respectively, shall be administratively responsible to Dr. Hawley and through him to the Blue Cross and Blue Shield Commissions, respectively.

"4. That the annual meeting of both Blue Cross and Blue Shield Plans should be held jointly at a date in the Fall of 1948, to be selected by the Joint Executive Committee.

"5. That the Joint Executive Committee should select its chairman, determine its own procedures, and that its chairman should alternate between representatives of Blue Cross and Blue Shield Plans semi-annually, and that the chairman first be selected by the Joint Executive Committee following the annual meeting of Blue Cross and Blue Shield Plans in the Fall of 1948.

"6. That the principle be established that the areas included within the respective districts of the Blue Shield Plans and the Blue Cross Plans should be identical.

"The matter of sharing of joint expenses incurred in the future joint activities undertaken by the Blue Cross and Blue Shield Commissions was discussed and it was agreed that this should be referred to the joint meeting of the two Commissions, with the understanding that whatever division of expenses was agreed upon should apply to all joint activities and that there should not be any selective division of expenses applying to specific joint activities. The representatives of the Blue Shield Commission suggested that some more equitable sharing of expenses than the tentative 80-20 suggestion be considered. The representatives of the Blue Cross Commission made it clear that any pro ration of these expenses would be entirely acceptable to them.

"The matter of the sharing of the expenses of the current Joint Conference of Plans was discussed and it was agreed that this should be referred to the joint meeting of the Commissions for their decision.

"The matter of suitable office quarters for Dr. Hawley and the staffs of the two Commissions was discussed at length. It was agreed to recommend to each Commission that the entire staffs of both Commissions be quartered at a single location and this location be other than that now occupied by the staff of either Commission."

ARTHUR M. CALVIN, *Executive Director*
Minnesota Hospital Service Association

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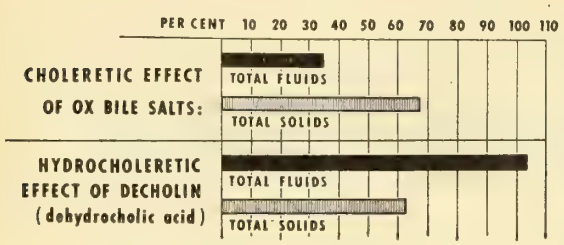
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WOMAN'S AUXILIARY

Nicollet-Le Sueur

The Auxiliary to the Nicollet-Le Sueur Medical Society held a tea Wednesday, April 14, at Rundstrom Hall on the Gustavus Adolphus campus, St. Peter. Dr. Robert N. Barr, Minneapolis, guest speaker, presented the subject of "Cancer." The meeting was open to the public.

At the same time high school and college girls were invited to hear a talk given by several county nurses, the college nurse and the public school nurse on "Shortage of Nurses and Need for Recruitment of Girls for Nursing."

Ramsey County

In observance of National Health Week, the Auxiliary to the Ramsey County Medical Society was host to representatives of clubs and civic organizations at a guest day meeting, Wednesday, April 14, 1948, in the medical library, Lowry Medical Arts Building.

Dr. Stewart C. Thomson, associate professor in the University of Minnesota medical school, spoke on "Looking Backward and Forward in Health." Motion pictures of rehabilitation work at Veterans' hospital among spastic children were shown.

Organizations which had exhibits for the meeting included the Minnesota Public Health association, Dr. E. A. Meyerding, executive secretary; Minnesota Society for the Prevention of Blindness, Mrs. Dorothy Hamilton, executive secretary; American Cancer Society, Inc., Allan Stone, director; School Health, Dr. G. W. Snyder, school physician; Minnesota State Department of Health, William Griffith, director; Minnesota Heart Association, Thomas Morrow, executive secretary, and enrollment committee of the Minnesota Nurses' Association, Mrs. Dolores Colesworthy, chairman.

Mrs. Louis Benepe, auxiliary president, presided at the gathering, which was followed by a tea.

Renville County

The Auxiliary to the Renville County Medical Society met Tuesday evening, April 13, 1948 at the New Clock Cafe at Olivia at 7 P.M. for a steak dinner. No business meeting was held. Members preferred to stay at the joint meeting with the Medical Society to hear Dr. Miller of Minneapolis speak on "Neurosis in General Practice."

Stearns-Benton

The Auxiliary to the Stearns-Benton Medical Society met Friday evening, March 19, 1948 at the home of Mrs. E. N. Milhaupt, St. Cloud. Assistant hostesses were Mrs. E. V. Wetzel and Mrs. J. E. Conway.

Mrs. Julius Buscher and Mrs. T. N. Fleming reported on the State Health meeting recently held in Minneapolis. Mrs. Wm. Friesleben asked for articles for the layette the Auxiliary maintains for needy mothers. Reports

were given by the following chairmen: Mrs. R. N. Jones, Red Cross and Postwar Planning; Mrs. S. J. Raetz, Historian; Mrs. Carl Luckemeyer and Mrs. E. V. Wetzel, Membership, who reported Mrs. Lawrence Kuhlmann of Melrose as their newest member; Mrs. Joseph B. Gaida, Publicity. Mrs. T. W. Hovorka, treasurer, reported on the financial status of the Auxiliary.

Mrs. Jones introduced the speaker of the evening, Miss Martha Van Brussels, who gave an instructive and interesting talk on "What St. Cloud is Doing for Its Crippled and Handicapped Children." She divided her talk into four points: (1) History of the project, (2) Educational progress, (3) Social Aspect, (4) Advantages of Children attending Summer Camp, financed through the sale of Easter Seals.

Nineteen members answered roll call. During the coffee hour Mrs. Buscher poured.

Washington County

The Auxiliary to the Washington County Medical Society met Tuesday April 13, 1948 at Stillwater. The Dutch treat luncheon was held at the Grand Cafe. Guest speakers, both from Minneapolis, were Mrs. Harold Wahlquist, president-elect of the State Medical Auxiliary and Mrs. F. H. K. Schaaf, president of Hennepin County Auxiliary.

Minnesota Academy of Medicine

Meeting of January 14, 1948

The Annual President's Meeting of the Minnesota Academy of Medicine was held at the Town & Country Club on Wednesday evening, January 14, 1948. Dinner was served at 7 o'clock, and the meeting was called to order at 8:15 by the President, Dr. T. A. Peppard.

There were fifty-five members and four guests present.

The following Past Presidents of the Academy attended: Drs. Henry L. Ulrich, John E. Hynes, J. C. Litzenberg, R. T. La Vake, Carl B. Drake, J. A. Johnson, Martin Nordland, Harry B. Zimmermann, A. G. Schulze, S. E. Sweitzer, and the retiring President, Dr. Ernest M. Hammes.

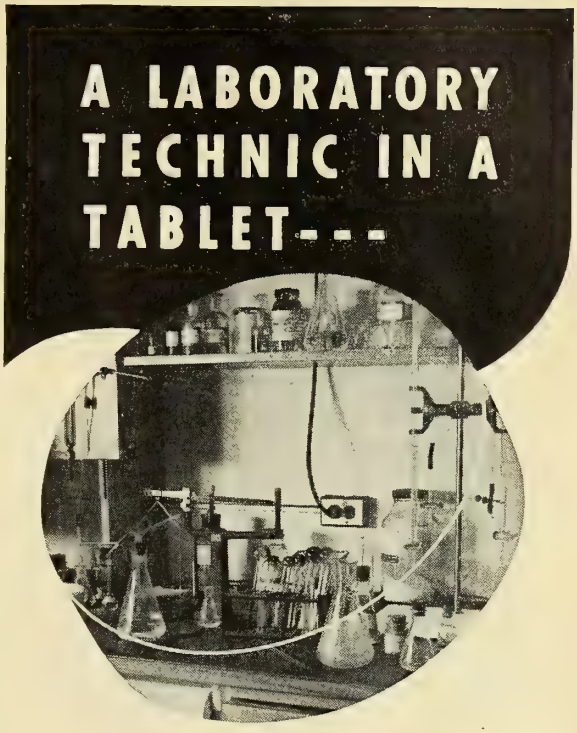
Dr. Wallace Cole was master of ceremonies and called on Drs. Hynes and Litzenberg for short speeches.

Dr. E. M. Hammes, of Saint Paul, then gave his address as retiring president, on "The Drug Addict," which appears on page 481 of this issue.

The paper was discussed by Drs. Adson, Hastings, and Hammes in closing.

The meeting was adjourned.

A. E. Cardle, *Secretary*



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Of General Interest

In Mahnomen, Dr. Kenneth W. Covey and Dr. Kenneth A. Danford moved into newly remodeled offices on March 15.

* * *

Dr. L. M. Evans of Sauk Rapids served as chairman of the cancer fund drive conducted in the village during the month of April.

* * *

A free tuberculosis clinic was held in the county nurse's office in Brainerd on April 10. In charge of the clinic was Dr. A. G. Saunderson.

* * *

In Olivia on March 10, Dr. A. A. Passer spoke on heart disease and the Minnesota Heart Association at a meeting of the local American Legion Auxiliary.

* * *

Dr. J. Emery Frank, Marshall, was elected commander of the Mongeau-Tholen Post of the Veterans of Foreign Wars at a meeting of the organization on March 10.

* * *

At a meeting of the Seventh District Medical Society in Sioux Falls, S. Dak., on March 30, Dr. W. B. Martin of Rochester presented a paper entitled "Physical Medicine in General Practice."

* * *

Participating in a basic science course for army officers at Walter Reed Hospital in Washington, D. C., on March 26 and 27, Dr. W. E. Herrell of Rochester presented a series of lectures on antibiotic agents.

* * *

Dr. K. B. Corbin, Rochester, spoke on "The History and Neurologic Examination in Cerebral Localization" at a meeting of the Department of Neurology of the University of Minnesota Medical School on March 25.

* * *

"The Rh Factor in Pregnancy" was the title of a talk given by Dr. Edward A. Banner, Rochester, at a meeting of the Blue Earth Valley Medical Society at Fairmont on March 25.

* * *

At the dedication of a new science building at Concordia College in Moorhead, Dr. Stanley W. Olson, assistant director of the Mayo Foundation, spoke on "The Application of Basic Sciences to Modern Medicine."

* * *

Dr. Avery De Hart Prangen, Rochester, was elected president of the Minnesota Academy of Ophthalmology and Otolaryngology when the organization met on March 12.

* * *

About the middle of March, Dr. D. H. Garlock of Bemidji went to Philadelphia to attend the graduation of his son, Grant Garlock, who received his doctor of medicine degree from Hahnemann Medical College.

During the last week of March, Dr. S. B. Seitz of Barnesville was in Chicago taking a postgraduate course at the Cook County Hospital Graduate School of Medicine.

* * *

After completing a three-year fellowship at the Mayo Clinic on April 1, Dr. Leonard L. Lovshin moved to Cleveland to become a member of the staff of the Crile Clinic.

* * *

Dr. Hermina Hartig, Minneapolis, discussed the work of the Minneapolis Public School Health Department at the regular monthly meeting of the Deaconess Hospital auxiliary in Minneapolis on March 19.

* * *

A talk on cancer was given by Dr. F. C. Closuit, Aitkin, at a meeting of the Aitkin Lions Club on March 31. Dr. Closuit spoke in the interests of the cancer fund drive which was then getting underway.

* * *

Principal speaker at a meeting of the Jefferson Parent-Teacher Association in Duluth on April 13 was Dr. E. Irvine Parson, Duluth, who presented a health talk.

* * *

In April, Dr. Harry Berge opened offices for the general practice of medicine in Isle. He is located in newly remodeled quarters in the Thorsten Building in that city.

* * *

Among Minnesota physicians attending a meeting of the American College of Surgeons in Minneapolis, March 15 and 16, were Dr. L. H. Rutledge and Dr. A. R. Ellingson, both of Detroit Lakes.

* * *

In St. Louis on March 18, Dr. Robert E. Priest, Minneapolis, spoke at a meeting of the otolaryngology group at Washington University, on the subject, "Tracheotomy in Bulbar Poliomyelitis."

* * *

Assisting in the presentation of a basic science course for army officers at the Army Medical Center in Washington, D. C., during the week of April 5, Dr. W. F. Kvale of Rochester gave a series of lectures on peripheral vascular diseases.

* * *

"Rheumatic Heart Disease" was the topic presented by Dr. A. R. Barnes, Rochester, president of the American Heart Association, when he addressed the members of the Queen City Post of the American Legion Auxiliary on March 23.

* * *

A postgraduate course on physical medicine for the internist, under the sponsorship of the American College

of Physicians, was conducted in Rochester during the week of March 22 to 26. The course was under the direction of Dr. F. H. Krusen of the Mayo Clinic.

* * *

At a meeting of the Medical Society of the County of New York, held in New York City on March 22, Dr. J. R. McDonald, Rochester, presented a paper entitled "The Detection of Pulmonary Neoplasms by the Cytology of Sputum."

* * *

Opening of the Johnson-Haberle Clinic in downtown Thief River Falls was announced on March 11 by Dr. H. C. Johnson and Dr. C. A. Haberle of that city. The clinic occupies fourteen rooms on the first floor of a newly constructed building.

* * *

Dr. Deane W. Benton, formerly of New Ulm, has become associated with the Boyd Clinic in Long Beach, California. He began his duties there on April 15. For the past two years Dr. Benton was associated with Dr. Howard A. Vogel in New Ulm.

* * *

Late in March, Dr. L. B. Kiriluk of Hallock became associated in practice with Dr. J. S. Collins in Wabasha. A graduate of the University of Minnesota Medical School in 1945, Dr. Kiriluk served in the army from April, 1946, to March 10 of this year.

* * *

In Albert Lea on May 1, Dr. E. T. Richlitz became associated in practice with Dr. F. G. Folken. A graduate of Marquette University, Dr. Richlitz has taken post-graduate work at the University of Southern California and has served for five years in the armed forces.

* * *

Dr. Jerome T. Syverton has been appointed professor and head of the Department of Bacteriology and Immunology in the University of Minnesota Medical School, it was announced April 9. He succeeds the late Dr. Robert G. Green.

* * *

While in California attending a conference of the American College of Physicians in San Francisco in April, Dr. and Mrs. Russell Sather, Crookston, visited relatives in Los Angeles, then returned to Crookston on April 26.

* * *

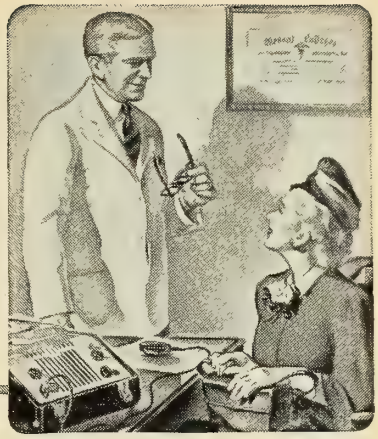
President of the Duluth Heart Association is Dr. Robert L. Nelson, Duluth, who was recently elected to head the organization which will carry out the work of the National Heart Association in northeastern Minnesota.

* * *

In Washington, D. C., on April 8 and 9, Dr. Robert R. Kierland of Rochester participated in the April symposium of the Syphilis Study Section of the United States Public Health Service. He presented a paper entitled "The Treatment of Neurospyhilis with a Combination of Malaria and Penicillin."

* * *

Announcement was made on March 11 that Dr. Robert F. Mears and Dr. Joseph C. Belshe, both of



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Northfield, had entered into a partnership agreement. Dr. Mears has practiced in Northfield for several years. Dr. Belshe, following his discharge from the army, opened an office in Northfield early this year.

* * *

"The Allergic Child Can Be Happy" was the title of an address presented by Dr. A. V. Stoesser, professor of pediatrics at the University of Minnesota, when he appeared on a program sponsored by the homemaker's section of the Minnesota Home Economics Association in Minneapolis on April 3.

* * *

Formal opening of Dr. C. D. Snyder's new office building in Kiester took place on April 10 when an afternoon open house was held. Construction work on the brick structure, which contains offices, examination rooms and a reception room, was completed earlier in the month.

* * *

Rheumatic fever was discussed by Dr. Charles H. Slocumb, Rochester, at a meeting of the Pre-School Mothers Club in Northfield on April 13. An assistant professor of medicine with the Mayo Foundation, Dr. Slocumb is a member of the Executive Committee of the American Rheumatism Association.

* * *

Dr. E. L. Tuohy, chief of laboratories at St. Mary's Hospital, Duluth, was one of the speakers at the 1948 Duluth Cancer Institute on April 9. Featured speaker at both the afternoon and evening sessions of the institute was Dr. Hayden C. Nicholson of the National Research Council.

* * *

Honorary degree of Doctor of Science was awarded to Dr. Alfred W. Adson, Rochester, by his alma mater, the University of Nebraska, at graduation exercises of the Nebraska College of Medicine on April 3. The degree was given in recognition of Dr. Adson's outstanding contributions to surgery of the central nervous system.

* * *

The Academy-International of Medicine has compiled a revised edition of its catalogue of surgical, medical and dental films for use in programs of medical and dental societies. Copies of the catalogue may be obtained from the Academy-International of Medicine, 214 West Sixth Street, Topeka, Kansas.

* * *

Between April 27 and May 6, Mantoux tests were administered to approximately 900 Owatonna school children in the seventh through the twelfth grades, under a program sponsored by the county Christmas Seal organization. In charge of the testing program was Dr. Kathleen Jordan, representing the Minnesota Public Health Association.

* * *

On April 9, Dr. Edward T. Clarke closed his office in Buhl and prepared to leave for Houston, Texas. He had practiced in Buhl since December, 1945, when

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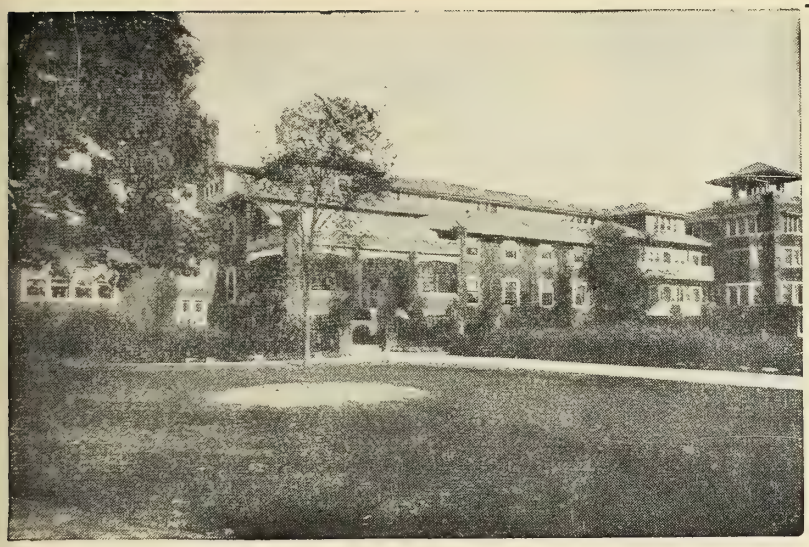
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he went there to fill the vacancy caused by the death of Dr. John L. Burton. Before moving to Buhl in 1945, Dr. Clarke studied at the Mayo Clinic and served in the army for four years.

* * *

Toastmaster at the annual dinner of the Washington County Public Health Nursing Service, held in Stillwater on April 19, was Dr. F. M. McCarten of that city. Among the speakers he introduced was Dr. Hilbert Mark, director of the division of tuberculosis of the Minnesota Department of Health, who spoke on "Suggested Plan of Organization of County Chest Survey."

* * *

New member of the staff of the Interstate Clinic in Red Wing is Dr. Clarence W. Wasmund, formerly of Brooklyn, N. Y., who joined the clinic early in April as head of the Eye, Ear, Nose and Throat Department.

A graduate of the Long Island College of Medicine, Dr. Wasmund interned at Kings County Hospital, Brooklyn, and later served for two years as resident eye surgeon at Long Island College Hospital.

* * *

The fiftieth anniversary of the establishment of Psi chapter of Alpha Kappa Kappa, medical fraternity, at the University of Minnesota, was observed at a dinner in Minneapolis on April 9. Among the alumni expected to attend were four of the original organizers: Dr. William H. Condit and Dr. Samuel E. Sweitzer, both of Minneapolis; Dr. Charles B. Lenont, Virginia, and Dr. N. O. Ramstad, Bismarck, N. Dak.

* * *

After more than a year of practice at 1144 Lowry Medical Arts Building, Saint Paul, Dr. George V. H. Kleifgen moved to Jamestown, N. Dak., on May 1, to become a surgeon in the Jamestown Clinic. His former office is now occupied by Dr. Coleman Connolly.

Dr. Kleifgen began private practice in Saint Paul in January, 1947, after completing a fellowship in surgery at the Mayo Clinic.

* * *

The Four-County Medical Society, representing medical groups in Olmsted, Houston, Fillmore and Dodge counties, voted in March to contribute $1,000 to help defray expenses of conducting chest x-ray surveys in the four counties. A check for $250 was presented to the Christmas Seal organization in Rochester to aid in the x-ray survey then being conducted in Olmsted County. Similar checks will be presented in each of the other three counties when surveys are held there.

* * *

After several weeks of convalescence following an operation, Dr. L. V. Berghs, Owatonna, resumed the full duties of his practice late in March. During his absence his practice had been conducted by Dr. W. H. Peterson of Litchfield. On April 15, Dr. Peterson moved to Owatonna to establish a permanent home and to be an assistant to Dr. Berghs. A graduate of the Uni-

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Surgical Anatomy & Clinical Surgery, two weeks, starting May 10, June 7, July 6.
Surgery of Colon & Rectum, one week, starting May 24, June 14.
Surgical Pathology every two weeks.
UROLOGY—Intensive course, two weeks, starting September 27.
FRACTURES & TRAUMATIC SURGERY—Intensive course, two weeks, starting June 7.
OPHTHALMOLOGY—Intensive course, two weeks, starting May 10.
Ocular fundus diseases, one week, starting June 7.
GYNECOLOGY—Intensive course, two weeks, starting June 7, September 13.
Vaginal approach to pelvic surgery, one week, starting June 21.
OBSTETRICS—Intensive course, two weeks, starting June 21, September 27.
MEDICINE—Intensive course, two weeks, starting June 7.
Personal course in Gastroscopy, two weeks, starting June 28, July 12.
Electrocardiography and Heart Disease, two weeks, starting August 2.
Hematology, one week, starting May 10.
Gastroenterology, two weeks, starting May 24.
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versity of Minnesota Medical School, Dr. Peterson served his internship at Sacramento County Hospital, Sacramento, California.

* * *

Dr. G. Charles Wilcox, a native of Brainerd, arrived in St. Peter on March 24, one month after his discharge from the army, to become associated in practice with Dr. C. S. Strathern. A graduate of the University of Minnesota Medical School in 1943, Dr. Wilcox interned at Miller Hospital in Saint Paul, then spent two more years there with a residency in surgery. In 1946 he entered the army where he specialized in the treatment of eye, ear, nose and throat diseases.

* * *

Principal speaker at a luncheon in the Saint Paul Athletic Club on April 1, Dr. Owen H. Wangensteen, professor of surgery at the University of Minnesota, launched the American Cancer Society's educational and fund-raising campaign in Saint Paul. Stating that more deaths from cancer can be expected as the age of the population increases, he said that cancer detection centers like the one recently established at the University "remain the promise of the future to people of our own generation."

* * *

More than a half million dollars will be given by United States and Canadian life insurance companies for research in heart disease in 1948. This raises to $1,800,000 the total donated by the Life Insurance Medical Research Fund for this purpose since 1945. Thirty-one hospitals, medical colleges and special research clinics and fourteen individual doctors will share in these donations for research. Approximately $18,900 has been allocated to Dr. Maurice B. Visscher of the University of Minnesota for research on physical factors in cardiovascular function.

* * *

Three lectures were presented by Dr. H. J. Moersch, Rochester, at the twenty-first annual spring graduate course of the Gill Memorial Eye, Ear and Throat Hospital in Roanoke, Virginia, early in April. Titles of the lectures were "Value of Bronchoscopy in the Diagnosis of Pulmonary Disease," "Hiatal Hernia" and "Nebulization in the Treatment of Tracheobronchial Disease." On April 8, at a meeting of the staff of the Medical College of Virginia Hospital, in Richmond, Dr. Moersch spoke on "Treatment of Esophageal Varices by the Injection of a Sclerosing Solution."

* * *

The role of discipline in the emotional development of the child was discussed by Dr. Edward Dyer Anderson, Minneapolis, at an open dinner meeting held by the Duluth Mental Hygiene clinic board in Duluth on March 30. Dr. Anderson, a clinical associate professor of pediatrics at the University of Minnesota, was in general pediatric practice before serving as a captain in the navy in World War II. Since his return to civilian life he has limited his practice to the emotional problems of children and adolescents. He is president-elect of the Hennepin County Medical Society.

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Baby-sitters were frowned upon by Dr. Benjamin Spock, Rochester, when he spoke at the Midwestern Conference on Nursery Education in Minneapolis on April 3. Pointing out that babies who are looked after by a different baby-sitter every night may grow up with various anxieties and other serious characteristics, Dr. Spock stated, "At the age when children form their strongest emotional attachments to their parents and need that kind of security, they're being cared for by a string of strangers." Dr. Spock is director of the Rochester child health project.

* * *

A new office building was opened by Dr. A. D. Mattson in St. James on April 5. A graduate of the University of Minnesota Medical School in 1939, Dr. Mattson interned at St. Mary's Hospital in Duluth, then became associated with Dr. C. J. Henry at Milaca for one year. In 1942 he began four years of service in the army, three years of which were spent in China with the 14th Air Force. After his discharge he lived in Madison for a year and was affiliated with the Madison Clinic. While his new building was being constructed at St. James, Dr. Mattson accepted a temporary appointment to the staff of the state hospital at St. Peter.

* * *

A three-day continuation course in cardiovascular diseases was conducted at the Center for Continuation Study at the University of Minnesota on April 15, 16 and 17. Among the lecturers for the course were Dr. George E. Fahr, professor of medicine, who spoke on diagnosis and treatment of acute coronary thrombosis, and Dr. John S. Gillam, medical fellow in obstetrics and gynecology, who described care of the obstetrical patient with heart disease. Other subjects discussed at the conference included rheumatic heart disease in children, recent advances in the use of cardiac drugs, and diagnosis of congenital heart disease.

* * *

An appreciation dinner was given in Wayzata on May 3 for Dr. Thomas J. Devereaux, a practitioner in Wayzata for twenty-seven years.

Waitresses for the dinner, which was attended by 250 friends of the doctor, were young ladies who had been ushered into the world by Dr. Devereaux. Clellan Card, Minneapolis radio personality, acted as master of ceremonies for a program which followed the dinner. Although Dr. Devereaux had given no indication of retiring, the dinner was given for him by local residents who wanted to show their appreciation for his years of service. Date chosen for the occasion was the physician's birthday.

* * *

The annual Duluth Clinic lectures, held at the University of Minnesota on May 11 and 12, were delivered by Dr. Arthur Grollman, professor of experimental medicine at Southwestern University, Dallas, Texas.

On May 11, Dr. Grollman spoke on "Recent Advances in the Pathogenesis and Treatment of Hypertension," and on May 12, his subject was "The Thyroid Gland and Its Disorders." At an informal seminar on May 12,

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he led a discussion on "The Interrelationship of the Endocrine Organs."

In Duluth on May 13, Dr. Grollman spoke at the Duluth Clinic on the subject, "The Hypothalamus and Its Disorders."

* * *

Dr. Thomas J. Kenyon has become associated with Dr. John A. Lepak in the practice of internal medicine, with offices at 1065 Lowry Medical Arts Building, Saint Paul.

After graduating from the University of Minnesota Medical School in 1937, Dr. Kenyon obtained a masters degree in pathology and hematology, then served as pathologist at St. Joseph's Hospital in Saint Paul until he entered the army. While in military service he was head of the pathology department of Northington General Hospital at Tuscaloosa, Alabama. For the past year he has had a residency in internal medicine at Ancker Hospital, Saint Paul.

* * *

Thirteen neighborhood immunization clinics were held in Minneapolis during the week of March 29 to April 2. Infants and children of pre-school and elementary school age were given first immunization or booster inoculations against diphtheria. Smallpox vaccinations were also given as needed. Four weeks later the clinics were again held to give the second inoculation in the diphtheria immunization procedure.

The clinics were sponsored by the Minneapolis Health Action Committee and were conducted under the direction of the Minneapolis Health Department. Parents who were financially able were expected to pay 50 cents per child towards the cost of the service.

* * *

Plans to create a medical arts center in Northfield were announced on March 11 by Dr. Stanley T. Kucera of that city. The schedule called for construction to begin early this spring, and it was expected that the building would be ready for occupancy by fall.

Dr. Kucera and Dr. I. F. Seeley, who recently formed a partnership, will occupy the entire first floor of the north wing of the structure. Additional quarters will be available for other professional men, including space for a drug store.

During the middle of March, Dr. Kucera spent a week in New Orleans, taking a postgraduate course in surgery at Tulane University. Shortly after his return to Northfield, he was the principal speaker at a meeting of the Pre-School Mothers Club on March 23, where he discussed "Emergencies and Signs of Communicable Diseases."

* * *

Dr. Viktor O. Wilson, chief of the special services division of the Minnesota Department of Health, resigned his position, effective May 15, to become city health officer in Rochester. He succeeds Dr. F. M. Feldman, who resigned to go to Washington to become director of the central office of co-ordination and analysis of the tuberculosis study section, National Institute of Health, United States Public Health Service.

A graduate of the University of Minnesota Medical

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School in 1931, Dr. Wilson interned at Ancker Hospital, Saint Paul, then studied pediatrics at two Chicago hospitals, engaged in private practice in pediatrics in Minneapolis, served on the staff at Ah-Gwah-Ching Sanatorium, and obtained his M.P.H. degree at Johns Hopkins in 1937. He joined the Minnesota Department of Health in 1937, serving as assistant director of the division of maternal and child health for two years and as director of the division from 1939 to 1946.

* * *

Among physicians attending a three-day continuation course in surgery at the University of Minnesota, April 8, 9 and 10, were Dr. Francis M. McCarten, Stillwater; Dr. F. F. Meyer, Faribault; Dr. Julius E. Haes, Mankato; Dr. W. Howard Parker, Chisholm; Dr. F. H. Baumgartner, Albany; Dr. C. W. Moberg, Detroit Lakes; Dr. William C. Heiam, Cook; Dr. Robert A. Glable, Plainview. Dr. K. L. Stensgaard, Thief River Falls; Dr. James J. Kolars, Dr. Carl W. Rumpf, and Dr. Donald J. Studer, all of Faribault, and Dr. Robert Delmore, Roseau.

Under the direction of Dr. Owen H. Wangensteen, chief of the Department of Surgery of the University Medical School, the course was designed to present newer concepts and developments in preoperative and postoperative care of patients Included in topics discussed were treatment of brain tumors, use of dyes in tumor diagnosis, treatment of burns, early ambulation, and present trends in combined anesthesia.

In discussing brucellosis at a meeting of the American College of Physicians in San Francisco during April, Dr. Wesley W. Spink, professor of medicine at the University of Minnesota, said that there are indications that the disease incidence is increasing both in domestic animals and in human beings. Dr. Spink urged the enactment of strict legislation to require the pastuerization of all animal milk used for human consumption, as a means of reducing the incidence of brucellosis in man.

He stated, however, that since no practical means exist for preventing individuals from contracting the disease by direct contact with infected animals, "the solution of this problem ultimately resides in the elimination of brucellosis from the animals. That," he said "would require the combined support of farmers, livestock producers, veterinarians, packing plant authorities and public health officials." The annual cost of the disease to the cattle industry alone in the United States, Dr. Spink stated, is almost $100,000,000.

HOSPITAL NEWS

Without waiting for Federal grants, Marshall will build its Weiner Memorial Hospital as soon as arrangements can be made, it was reported early in April.

Since Marshall is forty-seventh on the priority list of the state hospital plan, it probably would not be eligible for Federal aid for another two years. The city at present has a fund of $300,000 on hand, partly from a $150,000 bond issue which was approved in

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1944, and partly from a presentation made by Ben and Julius Weiner in memory of their father, Louis Weiner.

With the state hospital plan relieving some of the pressure that would be on the proposed Marshall hospital, it has been recommended that a fifty-bed hospital be constructed rather than the eighty-bed one originally planned. Present costs may exceed $8,000 per bed. A fifteen-acre site for the hospital has already been purchased.

* * *

The Long Prairie Commercial Club, after listening to a talk by Dr. M. E. Mosby on Federal aid for hospital construction, decided at its meeting on March 16 to form a hospital committee to investigate the situation and gather information about it. Long Prairie is nineteenth on the priority list of the state hospital plan.

* * *

Though the Moose Lake State Hospital is one of the most modern state mental hospitals in Minnesota, Dr. Henry Hutchinson, superintendent, stated early in April that the hospital is admittedly in need of increased personnel and additional funds to provide better care for the mentally ill.

Dr. Hutchinson said that while the hospital had the advantages of better buildings and perhaps better food service, it would need five ward doctors instead of two, and double the attendant load, to meet the standards approved by medical authorities.

* * *

Mr. Louis W. Hill, Sr., Saint Paul, who died at the Miller Hospital on April 26, 1948, gave $500,000 to the hospital in February of this year for the construction of a new wing, to face College Avenue to the east of the present structure. Mr. Hill had also made previous donations to the institution. He was the son of J. J. Hill, and succeeded him as president of the Great Northern Railroad.

* * *

Beginning May 3, and continuing through May, June and July, Dr. D. A. Dukelow, Director of the Health and Medical Care Division of the Minneapolis Council of Social Agencies, will broadcast a series of health talks entitled "Let's Talk About Health." These broadcasts, under the sponsorship of the Community Chest and Council of Minneapolis and Hennepin County, will be made each Monday at 7:15 p.m. over KUOM.

* * *

At the ninetieth annual meeting of the Lutheran Minnesota Conference held at Center City, on May 6, it was decided to build two additional units to Bethesda Hospital, Saint Paul; a nurses' home at an estimated cost of $750,000, and accommodations for persons suffering from chronic ailments, with an estimated cost of $250,000. It was also decided to construct an addition to Trinity Hospital, Ashland, Wisconsin.

BLUE SHIELD NEWS

Persons covered by Blue Shield as of April 15, 1948—17,378
Number of Blue Shield cases paid on April 15, 1948— 130
Total for 1948— 212
Amount paid on Blue Shield cases on April 15, 1948—$4,908.05
Total for 1948—$8,215.43

Even though the Minnesota Blue Shield Plan sold its first contract in November, 1947 and paid its first



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claim on January 15, 1948, there has been little publicity and no official announcement of its inauguration. On April 12 and 13, 1948, such a program was carried out with Dr. Paul R. Hawley, the newly appointed chief executive officer of the Blue Cross and the Blue Shield Commissions, launching the Plan.

Prior to accepting the post of chief executive officer of Blue Cross and Blue Shield, Dr. Hawley was a physician in the United States Army for thirty years, attaining the rank of Major General, and in World War II was responsible for the medical care of the troops in the European theater. After the war, he accepted the position of Chief Medical Officer of the Veterans Administration under General Omar Bradley. While with the Veterans Administration, he became known for his ability to cut government red tape and get things done, for his determination to "give the veterans the best in American medicine" and his insistance upon the "human touch" in the treatment of patients.

The highlight of the inauguration was the inaugural dinner held in the Grand Ballroom of the Coffman Memorial Union on the campus of the University of Minnesota on the evening of April 13, 1948.

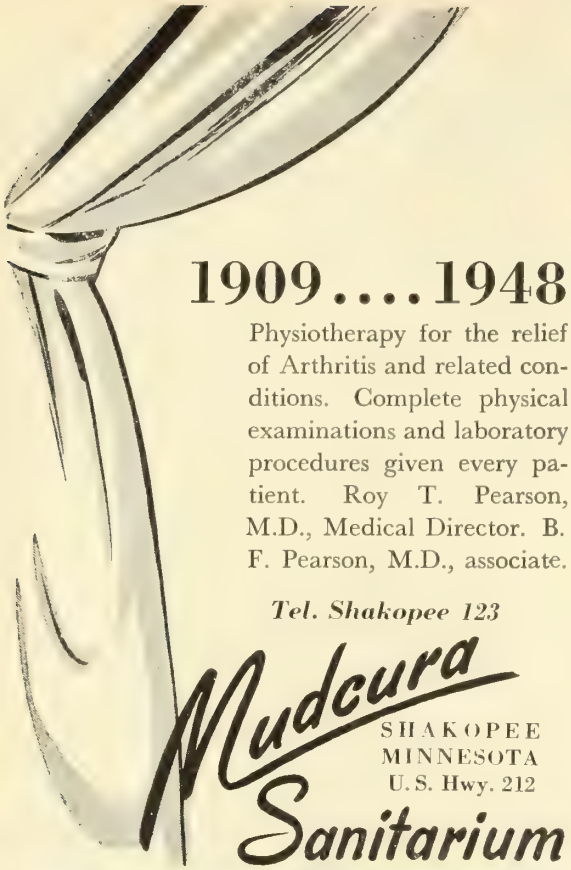
More than 4,000 invitations were sent to persons throughout the state. All doctors, state representatives and senators were invited to attend. Also invited to attend were nurses, newspaper and magazine editors, leaders of industry and labor, leaders in the field of public health both locally and nationally, members of the clergy, Blue Cross and Blue Shield group leaders and all Blue Cross and Blue Shield office personnel.

More than 800 people attended the dinner and heard Dr. Hawley deliver the inaugural address which was broadcast from radio station WTCN at 9:30 p.m. The address was "An American Health Plan Based on the American Principle of Free Choice," after which the following exerpts were taken:

"There isn't any question but in America today we have the best medical care in the world. We have more doctors per capita in this country, and we have better doctors. American doctors are no longer going to Europe for their graduate studies and training. They are taking them right at home. In fact, European medical students are now coming over here—to America—for their final training. And we have more hospitals, more nurses, more x-ray technicians and other skilled health workers in America than any other country. Not only more, but the best trained doctors, the best hospitals, and the most hospital beds per capita than any other country.

"I spent thirty-two years in government service, and I can guarantee that our government is the most extravagant operated today.

"Now the answer to the cost problem, of course, is to split the cost of medical and hospital care over a long period of time. There are several ways of spreading the cost. One way is through compulsory government health insurance, and it is interesting to note that in all the government plans for government control, the word 'compulsory' is used. The government health insurance would mean the compulsory purchase of food, drugs, and other things. The socialization of



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medicine would be the first step toward the nationalization of industry. And the nationalization of our health service would destroy the feeling of independence, personal responsibility and security which is so essential to our democratic society. The government has destroyed these virtual values whereever it has encroached upon the framework of individual enterprize and upon the personal responsibility and initiative of the individual person.

"There is only one alternative to compulsory government medicine. That alternative is voluntary medical and hospital care. Now, there are three types of voluntary health care:

"One such type is co-operative. The objection to this type of voluntary insurance is that is provides for no choice of physician and that it is difficult to get first class physicians to serve in a co-operative venture.

"The next type of voluntary insurance is the commercial carrier of insurance. In this type you must be careful to read your contract or policy thoroughly, especially the small print. Only a few reputable and reliable companies are selling health insurance, and there are a lot of little insurance companies putting out health policies and these are the ones of which you must be very careful.

"The third type—the voluntary prepayment plans—the Blue Cross and the Blue Shield Plans. First of all, these are nonprofit Plans and that means they can sell their services cheap. Secondly, they are underwritten by the people themselves and benefits are guaranteed by the hospitals in the cases of hospitalization, and by the doctors in the cases of medical and surgical care. Their contracts are clear, there is no fine print, and they preserve the American principle of free choice of hospital and physician.

"Blue Shield in Minnesota has clear objectives and a clear concept, and its enabling act provides for the free choice of physician. The law under which it operates prevents the practice of medicine as a corporation. Under Blue Shield you do not lose your benefits if you move from one state to another, or from one group to another. Every good citizen should be interested because it helps them to spread medical care to the people who need it. Families with low incomes should be interested because it provides a way for them to get medical care when they need it without jeopardizing them to finance it. Families with adequate, average income should be interested because sudden illnesses are provided for, and sudden illnesses can be expensive and wipe off the budget of the average income family. Industrialists and businessmen should be interested because this Plan, together with Blue Cross, is going to help prevent the nationalization of medicine. The nationalization of medicine, as I said before, is the first step toward the nationalization of all industry and of all free enterprize.

"Blue Cross Hospital Service Plan and the Blue Shield medical/surgical Plan are operated on a purely voluntary basis and provide for hospital expenses and the cost of physicians' services. Under such voluntary movements as these, a feeling of social responsibility and security is fostered among individuals, and this is essential to our democratic principle and society.

"As voluntary nonprofit agencies, Blue Cross and Blue Shield are the most successful media whereby services of our doctors and hospitals can be made available to the people on an economical basis. Each Plan is locally sponsored and locally controlled. Each operation is adjusted to meet local needs and existing facilities for health care. In other words, the Blue Cross and Blue Shield hospital and medical care plans are a part and parcel of our democracy. They represent the 'American Principal of Free Choice.' "

Blue Shield has now been launched in Minnesota and its growth and success is assured.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

DISEASES OF THE NOSE, THROAT AND EAR. William Lincoln Ballenger, M.D., F.A.C.S., Late Professor, School of Medicine, University of Illinois, Chicago; and Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Chicago; Surgeon, Department of Otolaryngology, Evanston Hospital, Evanston, Illinois; Assisted by John Jacob Ballenger, B.S., M.D., Research Fellow in Otolaryngology, Northwestern University School of Medicine, Chicago. 993 pages. Illus. Price, $12.50. Philadelphia: Lea & Febiger, 1947.

This revised edition is a highly recommendable textbook. There are not many others which cover the field of otolaryngology so thoroughly; any recent progress made in this field is included, adequately discussed and excellently illustrated. This is particularly true in regard to the subjects—rhinoplasty, radiation therapy and fenestration operation in otosclerosis. It is a most useful reference book for the postgraduate and practicing otolaryngologist.

JOHN J. HOCHFILZER, M.D.

HERNIA. L. F. Watson, M.D., F.I.C.S., 3rd edition. 732 pages. 323 illustrations. St. Louis: C. V. Mosby Co., 1948.

This edition of "Hernia" is a well-written, concise and profusely illustrated text on the subject of all types of hernias, as related to the abdominal portion of the body.

In the opening chapters the author discusses the general features of hernias occurring throughout the abdominal wall or in the abdominal cavity, and goes into considerable detail regarding anesthesia, surgical technique and the principles involved in treating complications.

Inguinal hernias are discussed completely throughout the text, and pathology and operative procedures are very well illustrated. All types of hernia repair in the inguinal region are considered and evaluated, with stress on the recurrence factors and the repair of the recurrent hernia. The various methods employed are thoroughly and concisely discussed, as well as the judgment involved in the choice of the type of repair to employ. The latter chapters of the book deal with the various types of hernias, such as ovarian, appendiceal, bladder and Meckel's diverticula hernias, as relating to the finding of these organs in the hernial sac. These are treated in detail, as they produce certain problems arising in the repair of the inguinal hernias.

The chapter on internal abdominal hernias is most interesting and complete. Each type is considered not only from the historical background, but as to definite operative procedures, the principles involved in the repair of the hernia, and how to correct it.

There are also chapters on the rare, seldom seen type of hernias, such as the obturator, sacral, perineal and lumbar types, which are completely discussed and illustrated. A chapter dealing with the injection treatment of hernias is complete, with a thorough consideration of the subject, and would be of interest



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to any one interested in this phase of hernia repair.

One is impressed by the completeness of the text in treating the general subject of herniations, as they occur in the abdominal region. The material is up to date, and at the conclusion of each chapter there is a very complete bibliography containing the more recent medical literature, relative to the subject.

Because of the completeness with which the subject of hernias is treated in this text, this volume should be in the library of anyone doing general surgery, not only for reference, but also for general reading on any particular type of hernias with which he might be confronted and called upon to treat. As a reference book, its value cannot be stressed too strongly, the illustrations give a thorough presentation of the operative technique, as well as the pitfalls and complications in the surgical treatment of hernias.

E. W. Minty, M.D.

REMINGTON'S PRACTICE OF PHARMACY. Ninth Edition. Edited by Prof. E. Fullerton Cook and Eric W. Martin, Philadelphia College of Pharmacy and Science. 1500 pages. Mack Publishing Company, 1948, Easton, Pennsylvania.

The Ninth Edition of Remington's Practice of Pharmacy, for more than sixty years the outstanding authority on the science and profession of pharmacy, will be available about June 1. This famous book has been completely rewritten from cover to cover by outstanding authorities in every phase of pharmaceutical practice, including hospital, manufacturing and retail pharmacy, as well as the allied sciences upon which the profession is built. The book consists of 1500 pages of the most modern scientific information available concerning pharmacy.

Since 1885, the "Remington" has been the most popular textbook on pharmacy. Leafing through the pages of the many editions reveals the story of the development of the two closely associated professions, pharmacy and medicine. As each new revision appeared, the latest developments in these two sciences and related fields were presented in a concise manner. The growth of the book has been phenomenal, and the new revision had a particularly auspicious beginning when the heirs of Professor Joseph P. Remington, original author of the book, turned the copyright of the book over to his alma mater, the Philadelphia College of Pharmacy and Science, so

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that the proceeds from its sales would be used for pharmaceutical education. The new edition is being translated into Spanish for distribution throughout South America, and will undoubtedly become the recognized authority on pharmaceutical practice in the entire Western Hemisphere.

The editor-in-chief of the ninth edition, Professor E. Fullerton Cook, internationally known as a teacher, editor and pharmacopœial authority, and the co-editor, Eric W. Martin, pharmaceutical and chemical consultant, have assembled an editorial staff of more than forty specialists, including experts in pharmacy, chemistry, the biological sciences, research, therapeutics, pharmacology, and practical pharmacy.

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In the ninth edition of the "Remington" will be found many newly developing phases of the biological, physical and chemical sciences. All the latest organic medicinals are extensively treated both from the chemical and therapeutic standpoint. The antibiotics (penicillin, streptomycin, et cetera), hormones, vitamins, surface active agents, quaternary ammonium bactericides, analgesics, anesthetics, sulfonamides, antihistaminic agents, amino acids, enzymes, steroids, and countless other subjects have all been treated comprehensively by a nationally known authority in each field.

The book is an unexcelled manual for teachers, a refresher course for the practicing pharmacist, a guide to modern therapeutics for the intern and physician, and a valued reference for pharmaceutical detail men, chemical firms, librarians and research workers.

PATHOLOGY OF TUMOURS. R. A. Willis, D.Sc., M.D., F.R.C.P. Sir William H. Collins Professor of Human and Comparative Pathology, Royal College of Surgeons, London; formerly Pathologist to the Alfred Hospital, Consultant Pathologist to the Austin Hospital for Chronic Diseases and Lecturer on the Pathology of Tumours in the University of Melbourne, Australia. 992 pages. Illus. London, England, Butterworth & Co. (Publishers), Ltd.; St. Louis, C. V. Mosby Company, 1948. Price $20.00.

As the author states, this book is the outcome of his special interest in tumors during twenty years as a hospital pathologist. Rather than give the usual didactic presentation of the subject, the author has given his own experience and even in controversial matters has plainly stated his own opinions. Of special interest are the chapters on the comparative pathology of tumors and experimental production of tumors.

Because of its general excellence, it is hard to select one chapter that is superior to another. The illustrations are exceptionally lucid; a workable index is listed. This book is highly recommended for the pathologist, the clinician and the student.

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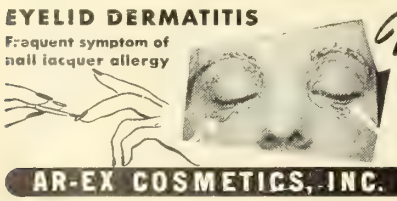
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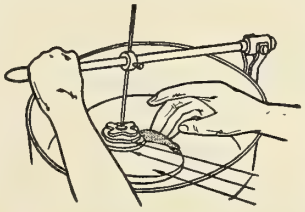
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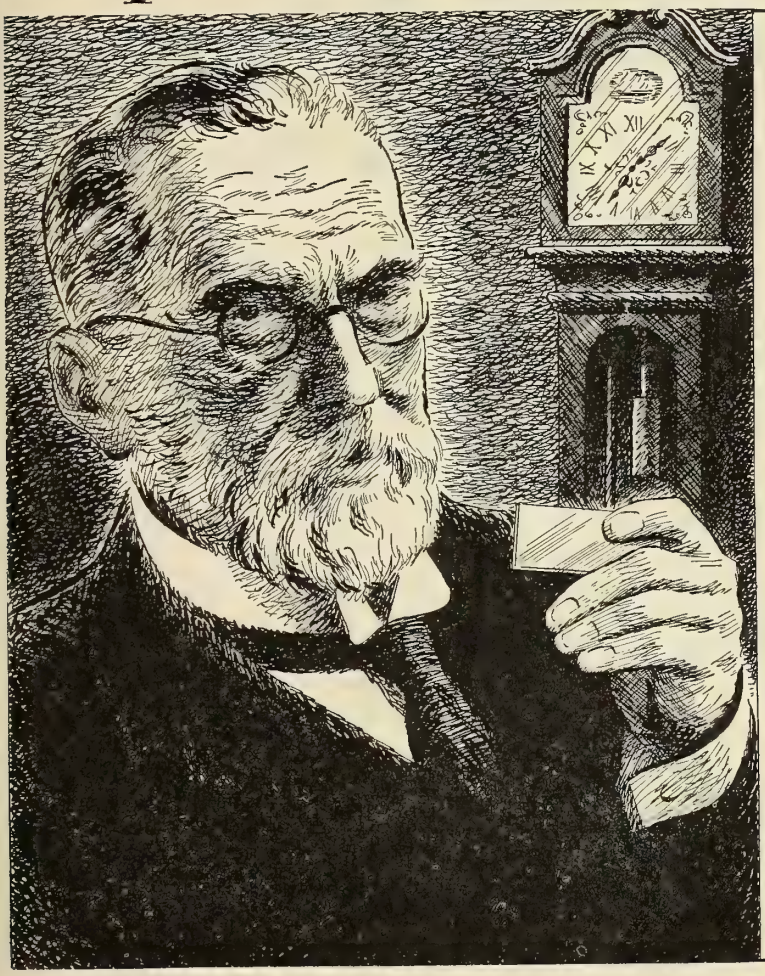
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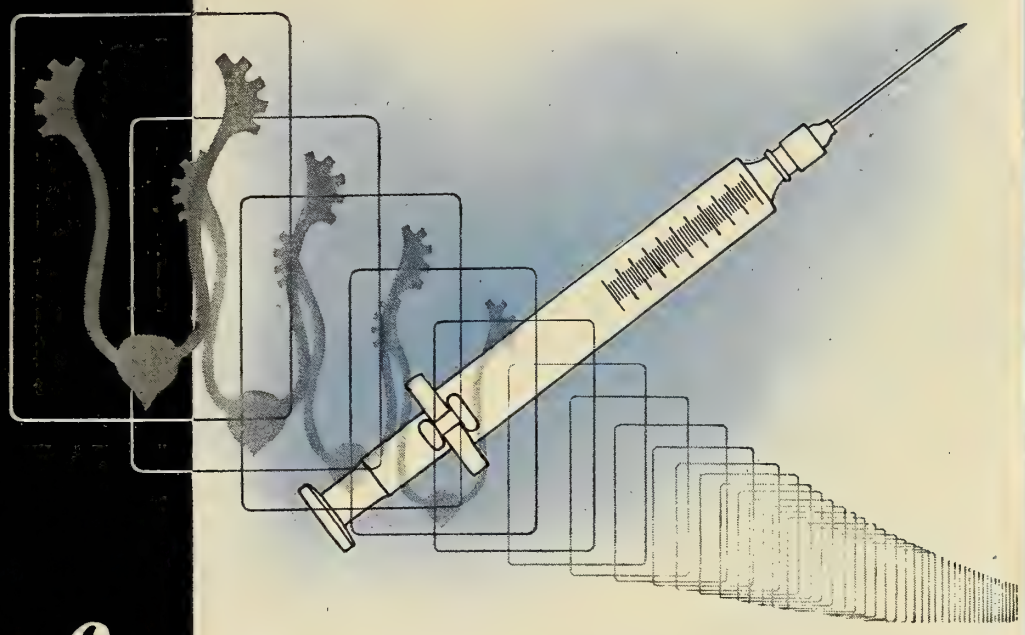


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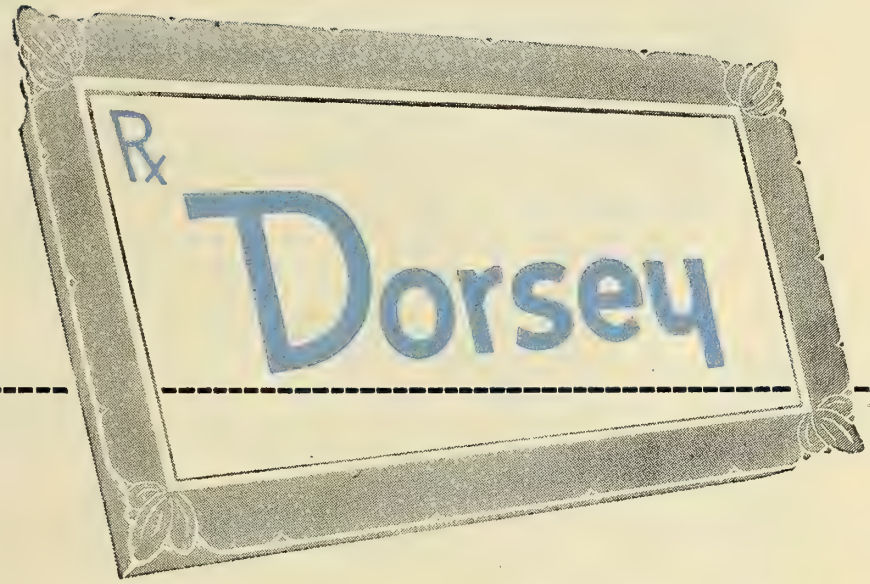
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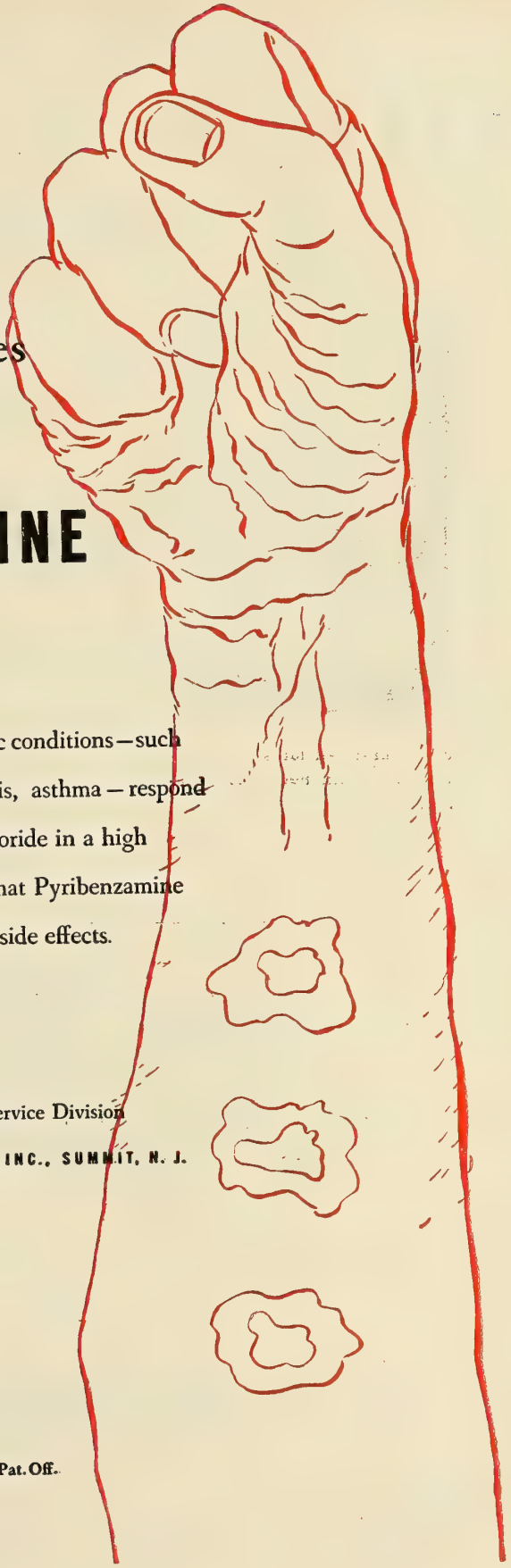
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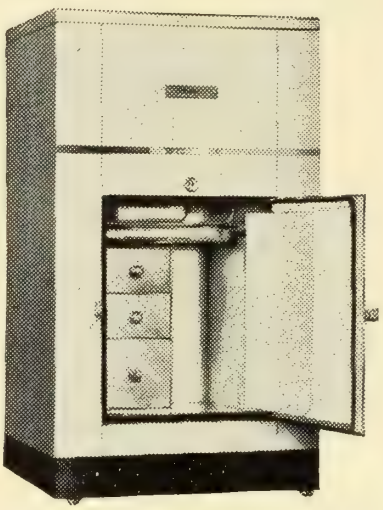
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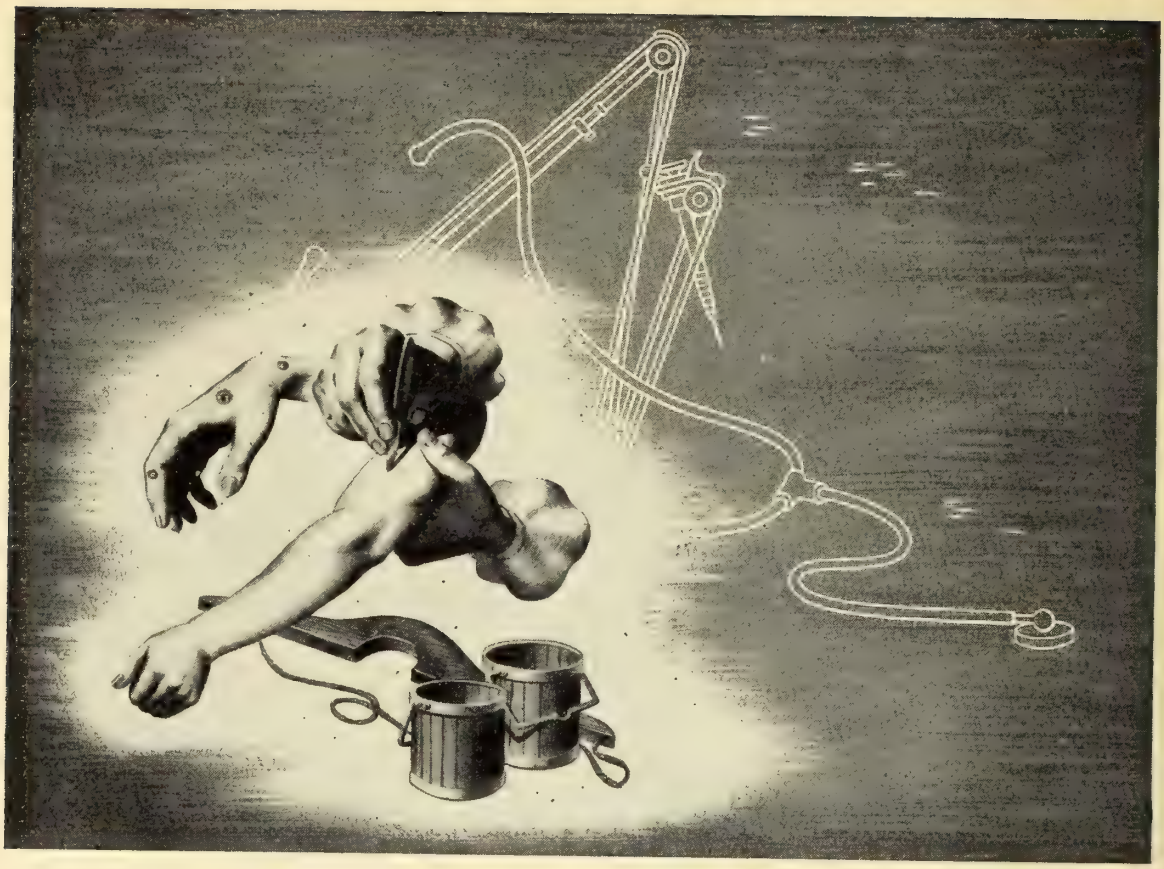


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MANAGEMENT OF RHEUMATIC FEVER AND RHEUMATIC HEART DISEASE

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THE phase of the rheumatic fever problem which will be discussed in this paper is a broad one. "Management of rheumatic fever and rheumatic heart disease" involves a consideration not only of the treatment of acute or active rheumatic fever but also the treatment of congestive heart failure associated with active rheumatic fever. Furthermore, because of the repetitive nature of rheumatic fever, any intelligent discussion of management should include a consideration of possible methods for the prevention of rheumatic fever recurrences.

Treatment of Rheumatic Fever

At the outset, it must be stated that unfortunately there is no specific treatment for rheumatic fever. Most of the therapeutic measures therefore aim at (1) building up body resistance and protecting the heart as much as possible from undue strain until the rheumatic process is overcome by natural mechanisms or subsides of its own accord, (2) keeping the patient comfortable and happy, and (3) protecting the patient against episodes which can cause an increase in the activity of the rheumatic process. In this discussion, consideration will be given not only to such procedures as may bring about improvement but also to those which are of no value or which may even cause untoward reactions; for in the treatment of rheumatic fever it is just as important to be cognizant of what may be harmful as it is to know what may be beneficial for the patient.

From the House of the Good Samaritan, Boston, Massachusetts. Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30, 1947.

Bed Rest

Bed rest is probably one of the most important of all therapeutic measures for rheumatic fever. Although available statistics comparing the results of treatment by long bed rest with the results of those in which there was no bed rest are scanty, clinical experience strongly suggests that patients do better with rest. It would appear that rest encourages the building up of body resistance in rheumatic fever patients just as it does in patients with other diseases. Furthermore, when the body is at rest, the heart does not beat as rapidly as it does at other times, and the mechanical strain on the heart is reduced to a minimum. Generally it is advisable to continue bed care until all evidence of active rheumatic fever has disappeared. This means waiting not only until joint pains, fever, nodules, and other clinical signs of the disease have subsided, but also until any abnormality of conduction time in the electrocardiogram has disappeared and until the sedimentation rate has fallen to within normal limits. Because of the frequently cyclic nature of rheumatic fever, it is advisable to have a normal temperature chart and three or four normal sedimentation rate determinations over a period of one to two months before accepting these findings as evidence that the rheumatic process has disappeared.

The total duration of this rest regimen should depend on the duration of active rheumatic fever. Because of the chronicity of the disease and because of the frequency of cardiac involvement in children, it probably is wise to advise a minimum of three months of bed rest for every child

with an established diagnosis of rheumatic fever. In many individuals the rheumatic process continues for as long as six months to a year and in rare cases for several years or longer. In such instances, rest should be maintained for a corresponding length of time.

Two exceptions to these recommendations are occasionally indicated.

1. Adults who develop rheumatic fever for the first time and who show no evidence of heart involvement are not likely to develop heart damage at a later date. With such individuals, therefore, it is safe to be more lenient and allow gradually increasing physical activity when the clinical signs of disease have subsided even though abnormal laboratory findings may still be present.

2. In some children and young adults the sedimentation rate gradually falls in conjunction with clinical improvement but levels off above the accepted upper limit of normal and continues at this abnormal level month after month even though the patient is otherwise entirely well. In some instances these apparently abnormal sedimentation rates eventually come down to within normal limits. In other instances they may continue for as long as three or four years or even longer. Although such persistently elevated sedimentation rates, even in the absence of other evidence of active rheumatic fever, may indicate a low-grade rheumatic process, nevertheless it usually is not practical to continue the bed rest regimen for a correspondingly long period. Therefore, when the sedimentation rate persists at an abnormal level and shows no further trend in a downward direction, it is reasonably safe to allow gradually increasing physical activity, provided that there has been a total of at least six months in bed and at least three or four months of freedom from clinical signs of active rheumatic fever, and provided that there has been no progression of the cardiac damage during this period.

When the time has arrived to allow the patient out of bed, it is wise to make the transition from bed rest to physical activity a gradual one. This gradual method of increasing time up allows the patient to adjust himself better to physical activity and allows for the detection of any untoward reactions to physical activity before harmful effects can be incurred.

Diet, Vitamins, and Iron

Although no definite relationship has been established between diet and the onset of rheumatic fever, proper diet does appear to contribute towards improvement in some patients. Additional vitamins and iron or iron-and-liver preparations are of questionable value but can do no harm. Usually the anemia which is often associated with rheumatic fever will not improve until the active rheumatic process subsides.

Salicylates

Although salicylates have been used for many years as a remedy for rheumatic fever, there is still disagreement among physicians as to their exact virtues. All agree that salicylates are of great value for symptomatic relief. The drug reduces fever promptly, so that within a few days of starting therapy the temperature can be brought down and maintained within normal limits. In addition to this antipyretic effect, salicylates have a striking effect on the joint manifestations. As a rule, pain and tenderness quickly disappear, and even joint swelling subsides relatively soon.* Salicylates may also relieve other pains, such as those in the precordium, chest, back, and abdomen. Finally, there is suggestive evidence that the drug may occasionally reduce the amount of effusion associated with pericarditis. Salicylates in small or moderate dosage, sufficient to reduce fever and relieve pain, may also reduce an elevated leukocyte count but do not appreciably lower the erythrocyte sedimentation rate.

Over a period of years, physicians had come to believe that, although salicylates by these effects could make rheumatic fever patients feel much more comfortable, their use did not actually shorten the course of the disease nor reduce or prevent heart damage. However, in 1943, Dr. Alvin Coburn suggested that the customary doses of salicylates, although productive of symptomatic relief, were too small. He observed that, where the drug was given in massive doses and where therapy was started soon after the onset of the disease, the duration of the rheumatic process could be shortened considerably and heart damage could be prevented. When given in this way, the drug was found to reduce the erythrocyte sedimentation rate as well as the temperature to within normal limits.

*Murphy would probably disagree with this statement. He failed to observe any appreciable effect of salicylates on joint swelling.

To obtain this remarkable effect, Dr. Coburn considered it necessary to give sufficient salicylate to produce a blood concentration above 35 mg. per 100 c.c. He also advised that the drug be administered intravenously during the first few days of therapy in order that the high salicylate blood level be obtained promptly. Others likewise reported favorable results with massive oral salicylate therapy, but unfortunately most investigators have not been able to equal Dr. Coburn's good results. They have not found very large doses more beneficial than the dosage necessary for symptomatic relief. Even with blood levels above 35 mg. per 100 c.c., the duration of the rheumatic process has not been observed to be shortened, nor has the incidence or degree of heart damage been reduced. Although in some instances the sedimentation rate has been brought to within normal limits by high blood concentrations of salicylate, when the drug therapy was discontinued the rate soon returned to the same level that it would have been had salicylates not been given. Furthermore, it now appears that the effect of salicylates on the sedimentation rate is nonspecific and that it may be the result of a toxic action on the liver. Some investigators have occasionally observed such severe toxic reactions from massive therapy that they feel the procedure is a dangerous one.

It appears, therefore, that the virtues of salicylate therapy are still not clearly defined. The drug in moderate doses is certainly of value for symptomatic relief. The answer to the question of whether very large doses given early in the course of the disease will or will not actually produce permanent beneficial results must await further investigation. Therefore, until the question is definitely answered, it would seem advisable to give salicylates in sufficient dosage only to produce relief of pain and to reduce high fever. The drug, in moderate doses, probably should also be given to rheumatic fever patients with pericarditis.

It is important to point out that salicylates, by relieving joint pains and abolishing fever, may mask two very important manifestations of rheumatic fever and thus may produce a false sense of security both for the patient and for the physician. Because of this camouflaging effect, salicylates should not be given to patients who do not require symptomatic relief or who do not have pericarditis. Furthermore, even when use of the drug is indicated, the therapy should not be continued month after month without occasionally discontinuing the treatment so that the presence or absence of pain and fever may be determined.

Finally, it is evident that as long as the patient is receiving salicylates, the absence of pain and fever is not necessarily an indication of the subsidence of the rheumatic process. In fact, because of the possible cyclic course of rheumatic fever, at least three or four weeks of freedom from pain and fever should elapse after the omission of salicylates before accepting the fact that these manifestations have completely disappeared.

In connection with the omission of salicylate therapy it is well to call attention to an occasionally observed phenomenon which may be described as a withdrawal effect. The abrupt discontinuance of the drug after a period of several weeks or more of treatment may be followed by the appearance of fever which subsides again spontaneously within three or four days and does not recur. This transient fever may be very difficult to interpret. It usually can be avoided by reducing the dose of salicylates gradually over a period of one or two weeks before finally omitting it altogether.

Methods of Administration.—Salicylates may be given by mouth, by rectum, or by the parenteral route. The intravenous injection of sodium salicylate is usually unnecessary, for even the high blood levels advocated by Dr. Coburn can be readily and quickly obtained when the drug is given by mouth. Although absorption of salicylates from the rectum is said to be poor, clinical experience suggests that it is sufficiently good to produce relief of pain in many instances, and hence this route may be utilized in patients who are vomiting. When sodium salicylate is given in this way, rectal irritation can be prevented to some extent by dissolving the drug in cornstarch solution.

For administration by mouth, a route suitable for most patients, either sodium salicylate or aspirin may be used. In my experience the latter is less likely to cause gastric irritations and, therefore, is the preparation of choice. Any salicylate preparation when given in large doses may produce vomiting by a central action, irrespective of the route of administration.

Dosage.—Whether salicylates are given as sodium salicylate or as aspirin, the dosage is approxi-

mately the same. For the relief of symptoms it usually is necessary to give between 0.030 and 0.045 gram (½ and ¾ grain) per pound of body weight every twenty-four hours. Thus a 50-pound child might require between 1.5 and 2.5 grams (25 and 40 grains) per day, and a 150-pound adult might require between 4.5 and 7.0 grams (75 and 110 grains). Some individuals may actually require less than this dose; whereas others, especially adults with severely swollen and tender joints, may require a somewhat larger dose for relief. In general, it is better to start with the average requirement and then, if necessary, increase or decrease the dose according to the clinical response of the patient. For the relief of symptoms it usually is not necessary to administer salicylates during the night. A simple routine is to divide the total daily amount into four to six doses and to give one dose every three or four hours while the patient is awake.

Toxic Effects of Salicylates

Allergic Reactions.—There are occasional individuals who are hypersensitive to aspirin. Apparently idiosyncrasy to this derivative is more common than to other salicylate compounds. Even small doses of the drug may be followed by allergic-like reactions, such as swelling of the nasal mucosa, puffiness of the eyes, and even asthma. Deaths after the ingestion of small quantities of acetylsalicylic acid, though fortunately rare, have been reported. These hypersensitivity reactions can usually be avoided by taking an adequate history and by not giving the drug to persons who report previous reactions. In rare instances when a patient has never previously taken aspirin or other salicylate preparations, and in those instances when a suspicious but inconclusive history of aspirin idiosyncracy has been elicited it is safe to administer a test dose of 0.3 grams (5 grains), and if there is no untoward reaction after several hours, the amount may be gradually increased to that which is desired.

Epigastric Distress, Nausea, and Vomiting.—Clinical experience suggests that these symptoms are usually due to direct gastric irritation, though a recent study would seem to indicate that the action may be entirely central. Although large amounts of salicylate are usually required to produce vomiting, occasional individuals are susceptible even to small doses. As a rule, aspirin is better tolerated by the stomach than sodium salicylate. To prevent gastric symptoms it is customary to give sodium bicarbonate in equal dosage, but in patients with severe heart damage it is better to avoid the administration of sodium because of the danger of causing fluid retention. Therefore, under the latter circumstances, the use of enteric-coated preparations is preferable when gastric irritation is a problem.

Tinnitus.—Even when salicylates are being given in only moderate dosage for the relief of symptoms, some patients will complain of ringing in the ears. This annoying reaction will often decrease and sometimes disappear after several days even though the medication is continued. If, however, the ear symptoms continue, and if they are very bothersome to the patient, it may be necessary to omit the drug entirely for twenty-four hours and then resume it in smaller amounts. Often a reduced dosage can be found which will not produce tinnitus and at the same time will be sufficient to control pain and fever.

When large doses of salicylates are given, tinnitus occurs more frequently and in a more severe degree. In addition to ringing in the ears, actual deafness may be produced. When this happens, it is well to omit therapy entirely for one or two days and then resume it with smaller doses. However, if large amounts of salicylate are necessary for the control of severe symptoms, it is comforting to know that permanent salicylate deafness has not been reported.

Hypoprothrombinemia.—Salicylates have been shown to cause a reduction of plasma prothrombin. Furthermore, post-mortem examinations of persons dying of salicylate intoxication have occasionally revealed the presence of capillary hemorrhages in the brain and in other organs. In spite of these observations there is generally no need for concern when salicylates are administered in small or moderate doses, for actual bleeding as the result of therapy is rarely, if ever, encountered, the prothrombin-depressing effect is sometimes only temporary even though treatment is continued, the lowering of prothrombin does not occur in all patients receiving the drug, and reduction of prothrombin to a critical level has not been observed except in association with extremely high plasma salicylate concentrations.

Rheumatic fever patients who happen to be receiving salicylates occasionally may also be sub-

ject to nose bleeds and rarely may have petechial skin hemorrhages or other signs of bleeding. Under these circumstances, even though there may be no actual proof of a causal relationship between the bleeding and the therapy, it probably is advisable as a precautionary measure to administer vitamin K. In spite of one opinion to the contrary, most reports suggest that the prothrombin-depressing effect of salicylate can be corrected and prevented by this vitamin. About 1 milligram of synthetic vitamin K is said to be needed for each gram (15 grains) of salicylate. Commercial preparations of aspirin which have vitamin K incorporated in the tablet are available.

Hyperpnea and Alkali Reserve Depletion—Hyperventilation is an important sign of serious salicylate intoxication and is an indication for the immediate omission of therapy. It must be distinguished from cardiac dyspnea. In hyperpnea the patient takes deep and rapid breaths and yet does not have any subjective symptoms of air hunger. Usually the patient can lie flat, and cyanosis is absent. The urine may or may not contain acetone.

Although the mechanism of salicylate hyperpnea is not entirely understood, it appears to involve a direct or reflex stimulating effect of the salicylate molecule on the respiratory center. With overventilation, carbon dioxide is blown off, and there is a compensatory excretion of alkaline urine. The net result is a reduction of the blood bicarbonate and often a rise in the pH. Apparently in occasional cases ketosis develops secondarily (as evidenced by the presence of acetone in the urine), and this in turn produces further depletion of the alkali reserve.

Fortunately, hyperpnea and serious depletion of the alkali reserve is usually encountered only when very large doses of salicylate are being administered. However, it occasionally occurs when the drug is being given in only moderate amounts for the control of symptoms, so that one should always be alert to its possible development. Children seem to be somewhat more susceptible than adults to this untoward reaction.

Whenever hyperpnea occurs, salicylate therapy should be discontinued immediately and continuously until all signs of the reaction have disappeared. Then, if salicylates are still necessary, they should be resumed in smaller dosage. Although the administration of sodium bicarbonate will increase the blood bicarbonate concentration, it may also raise an already elevated pH to a dangerous level. Furthermore, the administration of sodium to patients who have severe heart damage may precipitate congestive failure by increasing the retention of fluids. For these reasons it probably is safer not to treat salicylate hyperpnea with sodium bicarbonate or other alkalis. The simple administration of sweet drinks by mouth, in addition to the omission of salicylates, is sufficient therapy in most instances.

Sulfonamides and Penicillin

Sulfonamides do not favorably affect the course of established active rheumatic fever; on the contrary, these drugs often seem to increase the activity of the rheumatic process or cause toxic reactions. Hence, the administration of sulfonamides is contraindicated in the presence of active rheumatic fever.

Penicillin likewise has no beneficial effect upon the course of rheumatic fever, and, therefore, it also is of no value as a therapeutic agent. Although some investigators believe that penicillin may aggravate active rheumatic fever, it has been my experience that most patients can tolerate the antibiotic, especially if it is given for periods of only a week to ten days. Because of its apparent harmlessness, penicillin, in contrast to sulfonamides, can be given to patients who have active rheumatic fever and who also have or are suspected of having some other condition for which the antibiotic is known to be therapeutically effective.

The ineffectiveness of sulfonamides and penicillin for the treatment of active rheumatic fever should not be confused with the possible virtues which these drugs may have for the prevention of rheumatic fever recurrences. Furthermore, there is suggestive evidence that, in patients with active rheumatic fever, flare-ups of the disease may be prevented, and the course of the illness may be favorably influenced by the early use of penicillin therapy for all intercurrent hemolytic streptococcal respiratory infections. This aspect of the problem will be discussed more fully when possible methods for the prevention of rheumatic fever are described.

Home School and Occupational Therapy

Rheumatic fever is a subacute or chronic disease. Recovery from the acute attack and con-

valescence usually take many months, during which time the patient cannot of course attend school. Rheumatic fever is also a repetitive disease, and, hence, further loss of time from school is caused by recurrences. Because of these prolonged absences, the rheumatic child is sometimes obliged to repeat grades and to attend classes with children considerably younger than himself. A frequent result of this unfortunate situation is that the child loses interest in continuing his education and develops a feeling of inferiority.

A very important part of the treatment of rheumatic fever, therefore, is the provision for such home instruction as will keep the patient abreast of his school studies. In many cities the school system provides home teachers who will visit the child two or three times a week. Except during the more acute stages of the disease, most patients are not too ill to study in bed, and with adequate instruction many make such excellent progress that they are able after recovery to return to the grade of school to which they would normally have been promoted had their attendance not been interrupted by illness.

Patients who do not feel very ill find the long months of bed rest extremely monotonous. Although home schooling somewhat relieves the monotony, recreational activities contribute the most toward keeping the child happy. In this field the occupational therapist usually proves invaluable. However, many arts and crafts can be taught to a child by his parents if a professional instructor is not available.

Treatment of the Heart: Congestive Failure

Most patients with active rheumatic fever do not require treatment directed towards the heart itself. Although it is true that bed rest may benefit the heart by reducing the amount of its work and its speed, even rest is chiefly of value because it stimulates the body's natural resistance to the rheumatic process. The heart itself requires treatment only if there is congestive failure, pericardial effusion with tamponade, or disturbances of rhythm such as auricular fibrillation. Tamponade resulting from rheumatic pericarditis fortunately is rarely encountered, and the treatment of disturbances of rhythm is essentially the same as when these conditions occur in association with other kinds of heart disease. Hence the limited time which is available will be devoted to the problem of congestive failure associated with active rheumatic fever.

Bed Rest

Bed rest, an obvious part of the treatment of congestive heart failure, has already been discussed under the treatment of active rheumatic fever. In the presence of congestive failure, the rest regimen should be as strict as possible. The patient should be allowed to lie flat or to sit up against a back support, whichever gives more comfort.

Salt Restriction

In the presence of congestive failure, restriction of sodium tends to increase the urinary output, while the ingestion of sodium increases the retention of fluids. A maximum diuretic effect is obtained with a so-called "salt-free" diet in which the daily amount of ingested sodium chloride is restricted to 2 grams (30 grains). In order to obtain this minimum intake, it is not only necessary to refrain from the addition of salt at the table and in cooking but also to select foods which are very low in salt content.

Food which is so nearly salt free tastes extremely flat. Powdered ammonium chloride shaken on sparingly from a pepper shaker may contribute a slightly salty taste, but too much of this causes a bitter taste. Spices and salt-free condiments may also improve the taste of the food slightly. Even with the use of these salt substitutes, the diet will still not be very palatable, and many patients will not eat or will eat very poorly. Since an adequate food intake is an important part of the treatment of the active rheumatic process, a diet which is too restricted in salt may defeat its own purpose. Therefore, for patients who will not eat a "salt-free" diet, it is advisable to be more lenient and to prepare for these individuals a diet which is relatively low in salt content but which is still palatable.

Fluid Restriction

It is still customary with many physicians to restrict the fluid intake of cardiac patients who are in congestive failure. However, if the salt content of the diet is sufficiently low, fluid restriction is not necessary, since without sodium, excess amounts of fluid will not be readily retained in the body. Furthermore, patients who are suffering from an active inflammatory process such as rheumatic fever become dehydrated if their fluid intake is too strictly curtailed. It is, therefore, generally advisable to allow rheumatic fever patients to drink as much as they wish,

especially if their salt intake is low. Most patients who do not ingest much salt will not desire excess amounts of fluid.

Theobromine Diuretics

These substances, which belong to the xanthine group of drugs, provide us with one of our most effective weapons for combating congestive failure when it occurs in the course of active rheumatic fever. There are several different theobromine preparations which are available for oral use. Most of them are obtainable in 0.5 gram (7½ grain) tablets, and the daily dose varies from 1.5 grams (22½ grains) to 4 grams (60 grains), depending on the size of the patient and the diuretic response. The drug is most effective when given in three or four divided doses per day and when administered daily until the need for it is no longer present. Many patients have been given theobromine diuretics every day for three or four months or longer without any untoward reaction and without any loss of the drug's diuretic activity. The percentage of rheumatic fever patients whose congestive failure can be kept under control by this diuretic is extremely high, especially if the drug is used in conjunction with a salt-restricted diet.

Of the available theobromine diuretics which I have tried, theobromine calcium salicylate (Theocalcin) is the most satisfactory. It is essentially nontoxic, and it is extremely well tolerated by the gastrointestinal tract, practically never causing nausea or vomiting even when given in as large doses as 1 gram (15 grains) three times daily to small children. The disadvantage of Theocalcin is its relatively high cost. One should also keep in mind that this drug contains about 35 per cent salicylate, and that 1 gram (15 grains) is equivalent in salicylate effect to 0.5 gram (7½ grains) of aspirin.

Another well-tolerated preparation is theobromine sodium acetate, which is made up in a specially enteric-coated tablet and sold under the trade name of Theosodate. Like Theocalcin, it does not cause nausea or vomiting and often produces a good diuretic response. However, it has the disadvantage of containing sodium, which should be avoided for patients who already have a tendency toward fluid retention.

Plain theobromine is relatively cheap and is an effective diuretic, but it frequently causes gastric irritation with consequent nausea and vomiting.

Theobromine sodium salicylate (Diuretin) is another relatively cheap and often effective diuretic, but it also is poorly tolerated by the gastrointestinal tract and, in addition, has the disadvantage of containing sodium. Its chief value is in the treatment of patients for whom a theobromine diuretic is desired but who, because of vomiting, cannot be given medication by mouth. To these patients theobromine sodium salicylate, which is water soluble, can be given by rectum in small retention enemata.

Ammonium Chloride

Ammonium chloride by itself has a mild diuretic action, but its chief use is in conjunction with the administration of mercurial diuretics, the action of which it seems to enhance. To be effective it must produce an acid urine. Ammonium chloride is obtainable in enteric-coated tablets of 0.5 grams (7½ grains), and the effective dose is usually one or two tablets three or four times a day (total of 1.5 to 4.0 grams daily) depending on the size of the patient. The drug can be given in these doses for long periods without producing any toxic reaction, but, when larger doses are used, one should watch for the development of acidosis. If enteric-coated preparations are given, nausea and vomiting can usually be avoided. To be sure that the dose is effective, the pH of the urine should be checked occasionally with nitrazine paper.

Mercurial Diuretics

These substances are organic compounds of mercury. Some of the better known preparations for intravenous and intramuscular injection are mercuzanthin, mercuhydrin, and salyrgan with theophyllin. These are obtainable in 1 c.c. and 2 c.c. glass ampules. For rectal administration, mercuzan and salyrgan with theophyllin are available as suppositories. Preparations of mercurial diuretics for oral administration have also been introduced recently, but they are not so satisfactory as the other forms since their absorption is uncertain and their administration not infrequently causes nausea, cramps, and diarrhea.

It is customary among physicians to give the mercurials in 1 c.c. or 2 c.c. doses at intervals of once or twice weekly. Even in adults such amounts of these potent diuretics, as a rule, cause a marked increase in urinary output for a period of about twenty-four hours, after which for several days there is a compensatory drop in the

urinary volume to a level somewhat below the usual average. This method of administration, therefore, has the disadvantage of causing considerable fluctuation in kidney excretion. Furthermore, the sharp rise in fluid loss may cause dehydration, chloride depletion, and consequent debility of a high degree.

A somewhat more satisfactory way of administering the mercurial diuretics, a way which has been emphasized only in the past few years, is to give the smallest amount which will produce a rise in urinary output above that of the fluid intake, and to repeat the dose at frequent intervals. In adults it may be possible to obtain a suitable diuresis with as little as 0.25 to 0.5 c.c., and in children 0.10 to 0.25 c.c. may suffice. If an adequate effect can be obtained with such small amounts of the mercurials, it is safe to inject the substance as often as every day or every other day and in this way avoid the marked fluctuations which are produced with the less frequent administration of large doses. Unfortunately, however, it is very difficult in most patients to obtain an absolutely constant and continuous diuresis even by the frequent small dose method.

The intramuscular route for the administration of mercurials is generally preferable since it is less likely to cause serious reactions than the intravenous route and usually causes a satisfactory diuretic response. The rectal route is often suitable for patients who are at home and who do not have the services of a physician or a nurse available at the time the drug is needed. Sometimes prolonged use of suppositories causes considerable rectal irritation so that the suppository can no longer be retained. When rectal suppositories are used for children, sufficiently small doses can be obtained by dividing the suppository longitudinally. The mercurial diuretics must never be given subcutaneously, for even a small amount under the skin may cause marked irritation and severe pain.

As has been already mentioned, the response to the mercurial diuretics may be greater and the minimal effective dose may be smaller if the patient's urine is kept acid by the oral administration of ammonium chloride. The latter may be given for a few days at a time, starting the day before the mercurial is administered, or it may be given as a daily ration for long periods, the mercurial preparation being given intermittently.

Comparison of Mercurial and Theobromine Diuretics

With rheumatic fever patients, mercurials are effective in a somewhat higher percentage and produce a much greater amount of diuresis than the theobromine substances. However, the mercurials, even when given in small amounts at frequent intervals, tend to have an intermittent action, whereas the theobromine drugs cause a more continuous diuresis. The theobromine diuretics also have the advantage of being effective when given by mouth. Because of these differences, the theobromine substances are not likely to be so upsetting to the patient.

In general, for patients in whom the production of diuresis is not of the utmost urgency, it is advisable to give the theobromine diuretics a trial and to continue them as long as they are effective. If the amount of fluid retention is great, and if time is important, or if theobromine diuretics have been tried without success, then it is advisable to use the mercurials. Often, if diuresis can be started by the use of the mercurials, a satisfactory fluid balance can be maintained by shifting to one of the theobromine preparations even though the latter originally had failed to be effective.

Digitalis

When auricular fibrillation is associated with congestive heart failure, digitalis is the drug of choice, and its use may produce dramatic results. The drug may also be of value in the treatment of certain other disturbances of rhythm.

However, when the cardiac rhythm is regular, digitalis usually produces a slight effect or none at all on the heart rate and on congestive failure which is associated with active rheumatic fever. In only occasional instances is the diuretic response great after digitalization. Furthermore, unless considerable caution is used, digitalis may sometimes have serious toxic effects on the heart. For these reasons digitalis is of secondary importance, and diuretics together with salt restriction should be resorted to first in the treatment of congestive failure. Only if the latter regimen fails to produce a satisfactory response should the patient be digitalized, and digitalization must be done cautiously.

Time does not allow for a detailed discussion of methods of administering digitalis, but they are essentially the same as those used when the drug is administered for the treatment of various

kinds of adult heart disease. Either whole leaf preparations or the more recently introduced pure glycosides may be employed. The dose used for children should be calculated on the basis of weight. Because patients with active rheumatic fever seem to be particularly susceptible to the toxic effects of digitalis on the myocardium, the drug should never be "pushed."

After-Care of Rheumatic Heart Disease

In discussing the treatment of rheumatic fever, it was pointed out that once the rheumatic process had completely subsided, gradually increasing physical activity should be allowed. Emphasis was put on the word gradually. Even after the patient is up all day, the continuation of a daily rest period of one to two hours is advisable for another year or longer. Out-of-door walks in good weather and mild forms of exertion favor improvement in muscle tone and should be encouraged. However, during the first year after recovery from an attack of rheumatic fever, the patient should avoid all forms of vigorous physical activity.

A regimen of gradually increasing activity is designed to keep the patient constantly in a well-rested condition and is based on the premise that fatigue induces the lowering of body resistance and hence contributes to the development of respiratory infections and flare-ups of the rheumatic process. The restrictions placed on the patient's activities are not aimed directly at the heart itself, and they are necessary even if the patient has escaped cardiac involvement.

After this first year of restricted physical activity has elapsed, what and how much should the patient be allowed to do? The answer to this question is extremely important. All too often the problem is so handled that many individuals who should be leading normal lives are reduced to a state of chronic invalidism. The physical activity allowed for persons with rheumatic heart disease should depend upon the degree of cardiac damage. The best measures of the latter are the size of the heart and the individual's actual tolerance for physical activity. Heart size is usually a much more accurate indication of the degree of cardiac involvement than are heart murmurs. As a rule, the bigger the heart, the greater is the damage. Tolerance for physical activity is best measured by what the patient finds he can do without becoming short of breath.

Individuals whose hearts are either normal in size or only slightly enlarged, and whose ability to perform exercise without developing shortness of breath is not below normal, should be restricted very little if at all. They should be allowed to take part in various sports such as swimming, golf, tennis, baseball, and even football. Perhaps extremely arduous activities such as long distance running are best avoided. I have known of some excellent performers in various fields of sport who have had mild rheumatic heart disease and whose participation in these sports apparently did not aggravate their cardiac condition. One young man whom I have particularly in mind had slight but definite aortic regurgitation. Nevertheless he was not only captain of a well-known college football team but was even named as a back on the "All-American" team.

When the heart is more than slightly enlarged, and when tolerance for physical exertion is reduced, the patient's physical activities must be limited. Even in these circumstances some mild forms of exercise are permissible. For such individuals the best rule is that as soon as slight dyspnea appears and before extreme fatigue develops, the causative activity should be stopped.

The foregoing discussion is based on the premise that physical exertion within the limits of exercise tolerance does not cause any undue myocardial strain or any increase in valvular damage of the rheumatic heart. Progression in rheumatic heart disease is nearly always due to recurrences of rheumatic fever. In other words, it is the active rheumatic process rather than physical strain which usually makes the heart grow worse. *Therefore the most important aspect of the after-care of patients with rheumatic heart disease, and as a matter of fact for all individuals who have once had rheumatic fever whether or not they have cardiac involvement, is the prevention of rheumatic fever recurrences.* The after-care should also include some attention to the prevention of subacute bacterial endocarditis, a not uncommon and an important complication of rheumatic heart disease.

Prevention of Rheumatic Fever

The prevention of rheumatic fever recurrences constitutes one of the most important aspects of the entire rheumatic fever problem and is fortunately a phase of the problem in which real progress has been made during recent years. As has

already been pointed out in previous discussions, rheumatic fever is a repetitive disease. It tends to return again and again, and with the recurrence more and more heart damage may be produced.

The methods of prevention are chiefly measures aimed at the prevention of hemolytic streptococcal respiratory infections, which are responsible for practically all recurrences of rheumatic fever, and, since streptococcal and nonstreptococcal infections are not always readily differentiated, measures aimed at the prevention of all respiratory infections.

General Measures

Respiratory infections are extremely contagious. Therefore, the rheumatic individual should avoid, as far as possible, exposure to people who have colds and should also avoid chilling and exposure to cold wet weather.

The spread of respiratory infections is especially favored by the herding together of individuals. Since the danger of rheumatic recurrences is particularly great during the first six months to a year after recovery from the disease, it is probably advisable during this period that the rheumatic child does not return to regular school nor attend church, the movies, or other crowded places. While home instruction is being given, the school teacher, social worker, and friends must be warned not to visit the home if they have any likely symptoms of a cold. When the patient finally returns to regular school, the co-operation of the school teacher should be requested in an attempt to prevent the child from sitting next to others who have respiratory infections.

The rheumatic child should sleep by himself in his own room, for sleeping with others is conducive to the contraction of colds.

"Body resistance" should be kept at its optimum by providing a well-balanced diet, plenty of sleep, and an extra rest period during the day.

Sulfonamides

It has been pointed out previously that the sulfonamide drugs not only are of no value in the treatment of rheumatic fever but that they may actually aggravate the active rheumatic process. Furthermore, even if streptococcal respiratory infections are treated with sulfonamides as soon as they are detected, there is no evidence that the therapy will decrease the incidence of rheumatic recrudescences. However, information has accumulated which suggests that the daily administration of small amounts of sulfonamide drugs to patients who have fully recovered from an attack of rheumatic fever will protect these individuals in large measure against the development of hemolytic streptococcal respiratory infections and hence prevent further attacks of rheumatic fever. Rosenberg and Hench gathered together the data of seventeen reports in the medical literature between 1939 and 1945 and found that among persons receiving sulfonamides the rheumatic fever attack rate was 2.2 per cent (twenty-two definite recurrences in 1,037 person-seasons), whereas the attack rate among untreated controls was 13.7 per cent (183 definite recurrences among 1,340 person-seasons).

When used for this prophylactic purpose, the sulfonamide preparation can be given in small amounts, but the drug must be given every day. Protection is afforded only so long as there is sulfonamide in the blood. The drug is not effective, of course, against sulfonamide-fast strains, but fortunately these are not common. Protection against sulfonamide-susceptible strains is not absolute either, and recrudescences of rheumatic fever have occurred in individuals taking the drug. However, the hazard of hemolytic streptococcal infection and the resultant chances of further rheumatic fever are greatly reduced.

Preparations and Dosage.—Although sulfanilamide and sulfathiazole were used in most of the published studies on rheumatic fever prophylaxis, the more recently introduced and apparently less toxic drugs, sulfadiazine and sulfamerazine, would seem to be preferable. But, with present knowledge, it is still difficult to determine which of these last two preparations is the more suited to the rheumatic fever prevention problem. Each has certain advantages and disadvantages.

The factors influencing the choice of a sulfonamide preparation are the antibacterial activity of the free drug, the height and constancy of the blood level obtained with small infrequent doses, the proportion of the drug which remains unconjugated (nonacetylated), and the amount of the drug which remains unbound to plasma proteins.† Sulfamerazine has the advantage of giving a higher and more constant blood concentration

†Observations by Bernard Davis on the affinity of plasma proteins, particularly albumin, for a wide variety of substances may have an important bearing not only on the problem of chemotherapy but also on many other problems in pharmacology, bacteriology, immunology, and physiology.

of the free (nonacetylated) drug with a given dosage. Hence, the desired level can be attained with smaller amounts and less frequent administrations. On the other hand, sulfadiazine does not become as readily bound to plasma proteins as does sulfamerazine. Reports in the medical literature suggest that at an approximate concentration of 10 mg. of the unconjugated drug per 100 c.c. of plasma, between 60 and 80 per cent of sulfamerazine is bound, while only 30 to 50 per cent of sulfadiazine is bound. Furthermore it appears that protein-bound sulfonamides are lacking in antibacterial activity. This difference would seem to indicate a definite advantage in the use of sulfadiazine. Unfortunately, available information comparing the concentrations of total effective drug (nonacetylated and unbound) in the blood of patients at various time intervals after small doses of these two sulfonamides is lacking, and hence a final decision cannot be made as to which of the two is likely to be most effective for prophylactic purposes.

In spite of a lack of exact information, certain approximations can be made. A careful study by Phair, Schoenbach, and Merrell shows that at various time intervals following single 1-gram and 2-gram doses, the concentrations of nonacetylated drug in the blood, on the average, are twice as high for sulfamerazine as for sulfadiazine. On the other hand, the various studies concerned with the binding of sulfonamides by plasma proteins suggest that for a given concentration of the total nonacetylated drug, the percentage of unbound drug, on the average, is twice as high for sulfadiazine as for sulfamerazine. Hence, it may be concluded that following a given dose the concentration of effective drug (nonacetylated and unbound) at any particular time interval is about the same for sulfadiazine and sulfamerazine.

For prophylactic purposes, the total daily dose of either of these preparations should probably be between 0.5 gram (7½ grains) and 1.0 gram (15 grains), depending upon the size of the patient. The total daily amount can be divided into two doses, one before breakfast and one at bedtime. The blood levels, which probably should be between 1 and 4 mg. per 100 c.c. for sulfadiazine and between 2 and 8 mg. per 100 c.c. for sulfamerazine, can be checked occasionally, and if necessary the dose can be adjusted to obtain the desired level.

Toxic Reactions and Precautionary Measures.—The great majority of individuals can take daily small rations of sulfamerazine or sulfadiazine without difficulty. Nevertheless, the sulfonamide drugs are potentially toxic substances, even when given in small doses, and may cause renal irritation, agranulocytosis, anemia, rash, and fever. Sometimes the toxic effects can be quite serious, especially if they are not recognized and are allowed to continue. Indeed, the danger of toxic reactions is sufficiently great so that sulfonamides should never be administered over a period of a week or longer to any patient unless both the physician and the patient are prepared to have both clinical examinations and appropriate laboratory tests at adequate intervals.

The longer an individual takes sulfonamides without difficulty, the less are the chances of his subsequently developing an untoward reaction. Examinations and tests, therefore, must be made more frequently at first and less frequently as time goes on. However, since even very late toxic reactions have sometimes occurred, the check-up observations should never be dispensed with altogether. An apparently satisfactory routine is as follows: Check-ups are made twice weekly for the first two weeks, once weekly for the next two weeks, and then every two weeks until a total of three months has elapsed. The examinations may then be spaced at four to six week intervals until the end of the first year. Thereafter, as long as the sulfonamide regimen is continued, the patient should be seen every two or three months.

At each visit a urine should be tested for albumin and its sediment examined under the microscope for the presence of red blood cells, and blood should be taken for a hemoglobin determination and a leukocyte count. A differential count is necessary only if the total white blood cell count is under 5,000.

The appearance of any definite toxic manifestation is, of course, an indication for the immediate discontinuance of sufonamide drugs.

Indications for and Duration of Prophylactic Sulfonamides.—The danger of recurrent rheumatic fever is so great that all children who have recovered from definite or probable rheumatic fever, irrespective of whether heart damage has been sustained, should be protected with daily small doses of sulfonamides—provided that ade-

quate check-up examinations and tests can be made and provided that no toxic reactions develop. Because of the frequent visits to the physician's office and the frequent blood tests necessitated by the prophylactic regimen and because of the risk of toxic reactions, sulfonamides should not be used unless the diagnosis of rheumatic fever has been reasonably certain.

Although the risk of recurrent rheumatic fever exists at all times, in civilian life it probably is considerably reduced after adulthood is reached. That there is a greater risk during childhood may be partly explained by the fact that exposure to hemolytic streptococcal infections is greatest during the period when children are herded together in schoolrooms. Therefore it is advisable that the prophylactic sulfonamide regimen be continued until the age of twenty years or at least until the completion of school.

Although hemolytic streptococcal infections decrease in frequency during the summer months, they do not disappear completely during this period. It is probably advisable, therefore, to administer sulfonamides throughout the year rather than to discontinue the drug during the summer months. Moreover, the temporary omission of therapy does not decrease the risk of toxic reactions nor does it appreciably reduce the number of necessary check-up examinations.

Penicillin

Penicillin, like the sulfonamides, has no therapeutic virtues once active rheumatic fever has begun. However, preliminary observations suggest that this antibiotic may have some application to the prevention of rheumatic fever recurrences. For purposes of prevention, penicillin might be used in two ways. The first is its use in therapeutic doses for the treatment of hemolytic streptococcal respiratory infections. The second application is for the prevention of streptococcal infections by the daily administration of an oral preparation of the drug.

Treatment of Hemolytic Streptococcal Infections.—The use of penicillin in this connection is still experimental. Nevertheless there is reason to believe that the prompt treatment of hemolytic streptococcal respiratory infections with penicillin in adequate doses may considerably reduce the chances of subsequent rheumatic fever recurrences, which normally occur in about 50 per cent of instances. The observations on which this statement is based are as follows:

1. Penicillin, *in vitro,* has a marked bactericidal action on most strains of hemolytic streptococci.

2. Throat cultures of patients ill with hemolytic streptococcal infections become "negative" very quickly after adequate penicillin treatment is started, and if the treatment is continued for ten days, the throats of most patients can be permanently cleared of hemolytic streptococci. This finding is in contrast to the effect of sulfonamides which as a rule take longer to produce "negative" cultures and which usually do not permanently clear the throat of streptococci.

3. If hemolytic streptococcal respiratory infections are treated with penicillin within twenty-four hours of onset, the causative organisms are killed so quickly that streptococcal antibodies (such as the antistreptolysin titer) sometimes fail to develop in the serum. Such results are not generally obtained when sulfonamides are used as the therapeutic agent.

When penicillin is used in an attempt to prevent rheumatic fever recurrences, treatment should be started as soon as possible and should be used for all respiratory infections with which there is a red sore throat or definite fever. Whenever possible a throat culture should be taken just prior to starting therapy, but the initiation of the treatment should not be postponed until the results of the culture are known. If after one or two days the culture is reported as "negative," the penicillin therapy can be discontinued; but if the culture is found to be "positive" for hemolytic streptococci, the treatment should be continued for a total of ten days even though apparent clinical recovery may occur much sooner than this. For adequate penicillin therapy, either 25,000 units of the antibiotic should be given in saline or distilled water intramuscularly every three hours day and night, or 300,000 units of calcium penicillin in beeswax and oil should be administered intramuscularly once daily, or 200,000 units should be administered by mouth five times daily. As soon as the temperature has reached normal and clinical recovery from the respiratory infection has occurred, therapy may be continued with oral penicillin, 100,000 to 200,000 units three or four times daily.

It should be pointed out that the rationale on which this application of penicillin is based is

chiefly theoretical. The number of actual observations of rheumatic individuals who have had hemolytic streptococcal infections treated with penicillin is not yet sufficient to tell us just how much, if any, the incidence of rheumatic fever recurrence is reduced. Nevertheless, since penicillin therapy is essentially a harmless procedure, it would seem advisable to use it for all respiratory infections of possible hemolytic streptococcal etiology among rheumatic fever susceptible individuals.

Penicillin therapy of streptococcal respiratory infections should be used not only for individuals who have recovered from previous rheumatic fever but also for those who are ill at the time with an active rheumatic process.

Prevention of Hemolytic Streptococcal Infections.—If penicillin is to be used for the prevention of hemolytic streptococcal respiratory infections, a method of administration must be available which is practical as well as effective. Except during periods of limited duration, the parenteral administration of penicillin obviously is not practical. The antibiotic could not be given this way every day for several years or longer.

When penicillin is given by mouth in doses of 100,000 units to 200,000 units three times daily to individuals who are carriers of hemolytic streptococci, it will usually clear the throats of the organisms, provided care is taken to give the drug at least one hour before and at least two hours after the ingestion of food. Although the clearing is not permanent in some instances, most individuals will have negative throat cultures for hemolytic streptococci as long as penicillin is being administered.

From these observations it is reasonable to conclude that the oral administration of 100,000 to 200,000 units of penicillin three times daily will also prevent the implantation of most strains of hemolytic streptococci in the throats of individuals taking the drug. Obviously this method of preventing streptococcal infections could be expected to be effective only as long as the antibiotic is being taken, and obviously the cost of oral penicillin would make its long-time administration prohibitive for most individuals. However, since in time the cost of penicillin may be sufficiently reduced to allow for its use, or the effectiveness of oral preparations may be improved so that smaller daily doses can be used, space has been given here to this possible way of preventing rheumatic fever. The relative safety of penicillin gives it a decided advantage over the potentially toxic sulfonamides, but until penicillin becomes more readily available, the daily administration of small doses of sulfadiazine or sulfamerazine will continue to be the method of choice for the prevention of rheumatic fever recurrences.

Transportation to Low Incidence Areas

Although information regarding the geographic distribution of rheumatic fever is still far from adequate, the available data suggest that the disease is less prevalent in tropical and subtropical areas than in the more temperate zones. Variations in geographic distribution of rheumatic fever are probably related to variations in the incidence of hemolytic streptococcal infections, but more exact information is still needed regarding this relationship.

There is no reason to believe that living in a southern climate will have any influence on the course of an attack of rheumatic fever once the active process has been established. On the other hand, if patients who have recovered from rheumatic fever and who live in relatively high incidence areas are transported to geographic areas of low incidence, the chances of subsequent recurrences will be reduced. It is obvious, however, that if transportation is to have any lasting beneficial effect, the patient must remain permanently in the low incidence area.

Salicylates

Observations reported by several different investigators suggest that if salicylates are administered promptly at the time of respiratory infections and continued for one month, the incidence of rheumatic fever recurrences is reduced. The daily dose of salicylates when used for this purpose is not large and averages between 0.03 gram (½ grain) and 0.045 gram (¾ grain) per pound of body weight. The total daily amount is administered in divided doses during the day only. Aspirin, sodium salicylate, or other forms of salicylate can be used.

On the other hand, the value of salicylates for the prevention of rheumatic fever is questioned by some physicians who believe that the drug by its effect on fever and pains merely camouflages the disease so that its presence is unrecognized. It would appear that the last word regarding the

prophylactic virtues of salicylates, just as in the case of the drugs' therapeutic virtues, has not been said and must await further studies.

If one wishes to give moderate doses of salicylates at the time of respiratory infection with the hope of possibly preventing rheumatic fever, there certainly can be no real objection, provided one is also alert to the possible masking effect of the drug. However, the procedure should not be substituted for the prompt treatment of respiratory infections with penicillin, a preventive measure which holds more promise of being effective. If salicylates are given, they should be used in addition to penicillin.

Prevention of Bacterial Endocarditis

Next to recurrent rheumatic fever, bacterial endocarditis is one of the most feared complications for the individual with a rheumatic heart. Prior to the discovery of penicillin, it was an almost invariably fatal disease. Although it rarely appears when the heart is entirely normal, it can occur on valves which are only slightly scarred as well as in hearts that are more severely damaged.

It is known that bacterial endocarditis is due to the direct invasion of the blood stream by bacteria which then lodge and grow on the heart valves, but the cause for the bacterial invasions is not always evident. In some instances it is due to a respiratory infection; while in others it is due to the temporary opening up of small blood vessels in vascular areas such as at the time of tonsillectomy or tooth extractions. Even such simple processes as the vigorous cleaning of teeth and the scraping of tartar off teeth at the gingival margins have been known to be followed by subacute bacterial endocarditis.

Bacterial endocarditis cannot always be prevented, but there is reason to believe that its incidence can be reduced by the following precautionary measures.

1. All severe respiratory infections should be treated with effective doses of penicillin.

2. Penicillin should be administered at the time of tonsillectomy, other operations, and at childbirth. Therapy should be started if possible the day before the procedure and continued for several days after it.

3. Sulfadiazine should be given at the time of tooth extractions and other dental work which involves manipulation of the gingival margins of the gums. For these purposes the drug should be started twelve to twenty-four hours before the procedure and continued for a total of four days. A suggested dose of sulfadiazine is 1 gram (15 grains) three times daily. If the patient happens to be in the hospital, it is advisable to substitute penicillin therapy for the sulfadiazine because it probably is somewhat more effective. Similarly, when tooth extractions are necessary for individuals who have or have recently had rheumatic fever, it is safer to use penicillin than sulfonamides.

FIRST EXAMINATIONS OF "PRIME OF LIFE" GROUP COMPLETED IN HEART DISEASE STUDY

Completion of the first annual physical examinations and tests of more than 300 Saint Paul and Minneapolis men between the ages of forty-five and fifty-four, who are serving as volunteer "human guinea pigs" in the long-range cardiovascular disease study being conducted at the University of Minnesota, was reported in April by Dr. Ancel Keys, director of the University's laboratory of physiological hygiene.

Subjects in this age bracket taking part in the research project are designated as the "prime of life" group. Tests on some 200 young men, eighteen to twenty-five, were completed last fall.

Sponsored in part by the United States Public Health Service, the heart disease study is designed to discover the individual characteristics and personal habits which affect the development of arteriosclerosis and hypertension. Most important phase of the program is the yearly testing of a carefully selected group of men who were free of these diseases when first examined.

Insurance records, according to Dr. Keys, predict that half of these men will die of diseases of the heart and blood vessels. The project under way in the Minnesota physiological hygiene laboratory seeks to find out the "how" and "why" of this present gloomy picture. Eventually it is hoped that it will be possible to predict the danger faced by each individual and to adjust his manner of living so as to delay or prevent the heart disease which now kills approximately half of all adults in the United States.

From among 1,000 men who applied for the project, 311 were selected for the "prime of life" group. First condition for acceptance was that the subjects be in general good health and free from significant cardiovascular disease. However, tests and measurements made in the laboratory showed that many of the subjects selected were less healthy than had been supposed.

Of the 311 men chosen for the elder group, nine had abnormalities which required that they be dropped from the program, and at least ninety others were found to have already developed some abnormalities of the heart and blood vessels.

Some degree of hypertension was discovered in forty-four of these ninety men, and forty-six had abnormal electrocardiograms, fourteen of the group being abnormal in both respects.

ABDOMINAL HODGKIN'S DISEASE

With Report of a Case Involving Retroperitoneal Nodes

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HODGKIN'S disease has various synonyms such as lymphogranuloma, pseudoleukemia, malignant granuloma, Sternberg's disease, Hodgkin's granuloma, Hodgkin's sarcoma, and sarcomatous Hodgkin's disease.

Isaacs[11] presents some interesting figures for this clinical entity and states there are less than 2,000 deaths per year (average for the years 1934-1936 was 1,614) in the United States from this cause. The rate has increased slowly. In 1921, the rate was 0.6 per 100,000 for white men, and 0.3 per 100,000 for white women. In 1931, it was 1.5 per 100,000 for white men, and 1.0 per 100,000 for white women. Thus the disease is generally accepted as being two to three times as great in men as in women. The percentage distribution of deaths in 1936 is also interesting: 7.34 per cent were under fifteen years; 40.52 per cent were in the age group from fifteen to forty-four years; 34.87 per cent were in the forty-five to sixty-four age group, and 17.27 per cent were over sixty-five years of age. Goldman and Victor[8] state that the youngest patient with Hodgkin's disease in their experience was five years of age, and the oldest was seventy-six years, with the highest incidence in the third and fourth decades. From these statistics, it is seen that one must be on the alert to diagnose this perplexing disease from childhood to senility.

No positive etiological factor has yet been determined. Ewing[7] cites several authorities who have found Hodgkin's disease to be closely allied to the acid-fast bacillus of tuberculosis. Others,[9] working with fresh tissues surgically removed from patients with Hodgkin's disease and inoculated into chickens, guinea pigs and rabbits, have been unable to prove the tuberculosis theory, and in their series no tubercle bacilli were found except in the case of proven tuberculosis. Bell[1] states that there are two views, the infectious and neoplastic, and that supporting the infectious theory is the febrile course and the presence of several cell types, and that in favor of the neoplastic is the 100 per cent mortality and the difficulty of distinguishing Hodgkin's disease from lymphosarcoma which is an admitted neoplasm. Busman and Johnson[2] state that the disease should be considered a malignant neoplasm since there is no uniformity in its symptom complex.

Ziegler's[15] classification is as follows:

1. Localized type.
2. Generalized type.
3. Mediastinal type.
4. Larvae or typhoidal type.
5. Splenic type.
6. Osteitic type.
7. Acute type.
8. Other types.

When one ordinarily thinks of Hodgkin's disease, one thinks of cervical adenopathy with easily palpable nodes and even a collar-like appearance of the enlarged glands in the neck. Desjardins[5] states that "Hodgkin's disease may start in any lymph nodes or agglomeration of lymphoid tissue in the body. Such as a node under the serosa of the gastric wall, a Peyer patch or lymph follicle in the small intestine, or in the lymphoid tissue of the vermiform appendix." But from a practical standpoint, he adds, these conditions start most frequently in the para-aortic nodes. Because the nodes which constitute this group drain the lymph from all the large and important organs in the abdomen, they are the most important group of lymph nodes in the body. Anatomically considered, they are extraperitoneal, or, as they are usually called, "retroperitoneal." Desjardins further states[8] that the enlargement of the retroperitoneal nodes as the earliest manifestation of the disease is much more common than is generally realized; 5 to 10 per cent of the cases of Hodgkin's disease begin in the retroperitoneal nodes.[1]

The symptoms of the involvement of the retroperitoneal nodes consist of diarrhea or constipation, progressive weakness, loss of weight and strength, anemia, abdominal pain, jaundice, ascites, frequently intense generalized pruritis, and a fever which may be persistent or intermittent. Cecil[4] states that in the abdominal form of Hodgkin's disease some of the most pronounced

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types of remittent fever are seen. Frequently, these patients begin by complaining of loss of strength, loss of "pep," belching and a heavy feeling in the epigastrium, which gradually progress toward the other symptoms, such as increasing difficulty with eating, increasing tendency to constipation, increasing weakness and pruritis which may become almost unbearable. Thus the signs and symptoms are very variable and progressive. It should be re-emphasized that 5 to 10 per cent of all Hodgkin's disease starts in the retroperitoneal nodes, and that in the years 1934 to 1936 there were 1,614 reportable deaths each year from Hodgkin's disease, which would mean that from 80 to 161 of these started in the retroperitoneal nodes. This figure is not high considering the United States as a whole, but one must realize that there are thousands of deaths each year which are listed as due to senility or cardiac failure, without an autopsy being performed. One never knows when one of these rare diseases may be encountered.

One must bear in mind that at times the retroperitoneal nodes become so large that they displace the liver and spleen; that they may enlarge posteriorly and cause pressure symptoms on the lower thoracic vertebra or may even infiltrate through the intervertebral spaces and invade the spinal cord; and that if lower abdominal nodes are involved, pelvic symptoms may develop, and sometimes one may find erosion of the wing of the ilium or symptoms of pressure on the ureters, bladder or rectum.

Therefore, if one sees a patient with a temperature of the Pel-Ebstein type, with pruritis and other abdominal symptoms, with persistent negative Widal tests and negative blood cultures, one must think of Hodgkin's disease involving the retroperitoneal nodes. In some of these cases, of course, the superficial nodes eventually become enlarged, and then an accurate diagnosis may be made by biopsy and examination by a competent pathologist. The diagnosis of this type of Hodgkin's disease is not easy, even with all the numerous present-day laboratory procedures, and it is usually made at laparotomy or at autopsy, and then not grossly but microscopically.

The blood picture is not diagnostic since some of these patients show a leukocytosis while others show a leukopenia. A mild secondary anemia is usually found. Differential blood studies frequently show "toxic changes," with polymorphonuclear shift to the right with marked toxic granulation. Eosinophilia is present in about 5 per cent of the cases of Hodgkin's disease.[12] About 60 per cent show Dorothy Reed or Sternberg cells. It is only by biopsy that a correct diagnosis can be made.

The duration of the disease may be from several months to years. Therefore, if one is fortunate enough to make a diagnosis, the end results are still not very encouraging.

Treatment consists of x-ray therapy and general supportive measures.

Desjardins[5] states that for effective treatment it is important to recognize the different types of involvement that might be found, and to arrange treatment accordingly.

In irradiation, it is well to divide the abdomen in different fields, with the umbilicus as the starting point, using at least four fields. Then the rays in these fields should be conveyed toward the midline where most of the nodes are situated.

The posterior aspect must also be considered, and it should also be divided into four fields and similarly irradiated.

In women who are still menstruating, it is well to avoid irradiation of the pelvis and thus induce artificial menopause unless the iliac nodes are involved. If marked leukopenia exists, or when the general condition does not warrant giving massive doses, it is well to give smaller doses until conditions have improved sufficiently to give larger ones.

In these cases, the doses should be repeated every four weeks up to the point of tolerance.

The technical aspects of x-ray therapy are left to the radiologist. It should not be assumed that x-ray therapy will cure these patients, but it may give them a few added weeks or months of relief from their symptoms and a few added weeks of life.

In very severe cases in which symptoms do not respond to irradiation therapy, Methyl-Bis Compound may be tried. It has been found[14] that this will cause some amelioration of the symptoms, but a cure cannot be expected. The therapeutic use of radioactive phosphorus in the treatment of eleven selected patients with Hodgkin's disease did not prove of therapeutic value in the dosage used.[10]

For the severe pruritis, roentgen ray therapy may be given.[11] Blood transfusions should be given when needed. Vitamins may be of some

value. Hematinics should be given for the usual secondary anemia. A nourishing diet is essential. An attempt should be made to maintain the fluid and electrolyte balance.

We would like to report a case of Hodgkin's disease involving the retroperitoneal nodes without affecting the abdominal organs.

Case Report

The case is that of a seventy-four-year-old white man who was first seen as an outpatient at the clinic in March, 1944. He was treated for a nonproductive cough, which responded well to treatment. At that time his blood pressure was 110/80, and his physical examination was otherwise essentially negative.

He returned to the clinic on September 3, 1946. He stated that he had been well until two to three weeks previously when he first noted anorexia and constipation. For the past few days he had noticed mild generalized itching. Chest and gastrointestinal x-rays were negative. He was treated with colloidal baths and similar treatment without benefit, and was admitted to the hospital on September 20. At that time his blood pressure was 100/76. Except for excoriations from scratching, physical examination was negative.

His urine on admission showed the specific gravity to be 1.009; there was a trace of albumin present, and there were 150 to 200 pus cells and 8 to 10 red cells present. His hemoglobin was 28 per cent; the white blood cell count was 8,950. A differential count showed toxic granulation of the cells, but was otherwise within normal limits. The blood was Rh positive.

After considerable difficulty in obtaining a compatable donor, a transfusion of blood was given. He was treated with increasing doses of ultra-violet light, colloidal baths and ferrated liver. On the sixth hospital day his temperature rose as high as 102.6°. Physical examination was negative. The red cells had almost disappeared from his urine; the number of white cells had reduced to 8 to 10 per high power field. A chest X-ray taken at this time was negative. Sulfathiazole was given empirically. His temperature gradually became normal in forty-eight hours, and the sulfa was discontinued. His general condition improved, and he was discharged from the hospital ten days after admission. At that time his hemoglobin had risen to 46 per cent; the red blood cell count was 3,540,000. His itching was controlled.

He was readmitted to the hospital on October 7 for a blood transfusion.

He was last admitted to the hospital on November 16, 1946. He had become acutely ill at home with severe chills and fever. He had noted generalized weakness for the past few days. The severe generalized itching had returned. Examination showed a tall thin white man who appeared acutely ill. There was a generalized exfoliative type of dermatitis. His blood pressure was 104/60; the temperature was 102°, the pulse 100, and the respirations 24. The examination was otherwise negative.

Laboratory examination on admission showed the urine to contain a trace of albumin and 40 to 50 white blood cells per high power field. The hemoglobin was 56 per cent and white cell count 15,750. A galactose tolerance test and a bromsulphalein test were normal. Repeat chest and gastrointestinal tract x-rays were negative.

The patient became progressively weaker, followed a downhill course in spite of repeated blood transfusions, and expired on December 2, 1946, seventeen days after his last admission and approximately 110 days after the onset of his symptoms.

On postmortem examination the external appearance showed a slight bronzing of the skin. The chest contents were within normal limits save for arteriosclerosis of the aorta. There was a large firm irregular mass in the left abdominal fossa which was retroperitoneal. The distal one-third of the transverse colon and the proximal one-half of the descending colon were firmly bound down to it. A few loops of small bowel were also adherent to the mass, but there was no evidence of encroachment of the lumen. The mass incorporated the aorta and vena cava. It measured 18 by 12 cm. The perivertebral, aortic, pancreatic, and mesenteric lymph nodes were enlarged and firm, but were discrete. The left kidney and adrenal could not be identified as such. The ureter was found to be emerging from the mass. It was markedly thickened and indurated throughout its course to the brim of the pelvis; beyond that point it was normal. On section, the cut edge everted, and the cut surface was seen to contain many small areas filled with thick semi-liquid purulent material. The bladder was markedly trabeculated, and in the vicinity of the left ureter there were three small diverticula, the largest of which contained approximately 30 c.c. of urine. There was a small median bar on the posterior lip of the urethral orifice which apparently accounted for the condition of the bladder and of the urine. The right kidney contained a few small cysts, but was otherwise normal in appearance. The lymph nodes of the pelvis and epigastric area were normal. The spleen and liver showed no evidence of tumor.

A diagnosis of Hodgkin's disease was made from the microscopic sections. They were sent to Dr. E. T. Bell at the University of Minnesota, who confirmed the diagnosis.

Sections of the remaining organs failed to show evidence of Hodgkin's infiltration. Additional diagnoses were arteriosclerosis of the kidney, and fatty infiltration and cloudy swelling of the liver.

Discussion

Fever is an important and significant symptom. The remittant type of Pel-Ebstein is the most important. In our case such episodes occurred. It is important to point out that, contrary to popular opinion, this type of fever is seen in cases other than Hodgkin's disease, notably in patients with caseous tuberculosis and necrotic tumors. Some authors[3] state that it should be "regarded with alarm and frequently indicates that the disease is advancing rapidly." Others[5] state that in cases

"known to have Hodgkin's disease, fever or itching, or both, mean that the condition has involved the retroperitoneal nodes." It is evident that the differential diagnosis of any case presenting idiopathic fever or itching must include Hodgkin's disease, more specifically Hodgkin's disease of the retroperitoneal nodes.

Laboratory findings are usually not significant. An increase in eosinophils is constant enough to be of significance. In some cases it may be as high as 60 per cent. A secondary type of anemia usually develops.

The disease may remain localized as in the case we have presented, but it usually extends along the spine. It may invade the intervertebral foramina; herpes zoster is a frequent symptom of this complication. The spleen, liver, lungs, bone marrow, and superficial lymph nodes are usually involved, frequently in that order.

On gross examination the nodes may strongly suggest neoplasm. They are enlarged, firm, pale, and tend to remain discrete. Microscopically the picture is quite variable, in the same case as well as in different cases. Hodgkin's disease is a disease involving the reticulo-endothelial system. In early infiltration and at the periphery of an involved group of nodes, the picture is frequently that of simple hyperplastic lymphadenitis. The normal landmarks are soon wiped out by the reticulum which is the result of an overgrowth of the lymphoid tissue stroma. This change is prominent early, and is the important diagnostic feature. Lymphocytes tend to become less prominent with the ingrowth of other cells types. A few plasma cells are almost always present. They may be so prominent as to overshadow the other cell types. Eosinophylic cells are usually numerous, but may be entirely absent. The giant (Dorothy Reed) cells are large cells with pale staining cytoplasm and vesicular nuclei. The cell is frequently multinucleated or has a multilobed nucleus. The nuclear membrane stains deeply, and the nucleus contains much chromatin. These cells tend to be more numerous in early lesions.

In old bulky lesions, and in febrile lesions, necrosis may be a prominent feature. This may be followed by extensive fibrosis. These fibrotic bands may comprise the bulk of the tumor.

The microscopic picture may resemble leukemia or lymphosarcoma so closely that diagnosis is impossible. This may be true of biopsy specimens or of specimens obtained at autopsy. In such cases the clinician must be content with a diagnosis of malignant lymphoblastoma. The finer diagnosis is not of importance, as the prognosis and treatment are the same.

Conclusions

1. Although Hodgkin's disease of the abdomen is not a common entity, it is probably more frequent than has been suspected.

2. Hodgkin's disease of the abdomen must be included in the differential diagnosis of any patient presenting idiopathic fever and itching, or other bizarre abdominal symptoms.

3. The positive diagnosis of Hodgkin's disease usually requires microscopic examination of biopsy material.

4. Deep x-ray therapy is the treatment of choice. Added months or years of comfortable life justify intensive treatment.

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CLINICAL SIGNIFICANCE OF GROSS HEMATURIA

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GROSS hematuria usually evokes one of two responses in both patient and physician. The more intelligent patient becomes duly alarmed and promptly consults his physician. The less fortunate patient will pay scant heed to this symptom or will disregard it entirely; the intermittent appearance of blood in the urine will lull this patient into a false sense of security. He will seek medical aid only when the hematuria has persisted for several years and at a time when it is difficult or impossible to cure.

Physicians likewise respond in one of two manners. The more enlightened or conscientious physician will realize that gross hematuria denotes the presence of a pathologic lesion in the urinary tract and that it is his responsibility to determine the source of the blood. To fulfill his responsibility, the physician will either carry out careful and complete urologic investigation or advise that such investigation be made. The less conscientious physician will, without adequate investigation, prescribe tablets or pills, hoping that the hematuria will cease—which it frequently does, only to reappear again.

This consideration will be limited to observations concerning the urologic causes of gross hematuria. This symptom may be produced by a host of medical diseases such as hemorrhagic nephritis, hemophilia and acute leukemia, but a discussion of these conditions is not germane. Of the urologic causes of gross hematuria, malignant lesions and infections of the urinary tract lead the list; these are followed by urinary calculi and prostatism.

It might be enlightening to consider the thoughts and observations of a urologist when confronted with gross hematuria. The age of the patient is important. Gross hematuria is rare during infancy and childhood. When it occurs, it usually is in response to infection, which usually is the result of congenital obstruction in some part of the urinary tract. Thus, a congenital obstruction at the ureteropelvic juncture may produce hydronephrosis which becomes infected and results in gross hematuria. Neoplasms of the urinary tract are uncommon in this age group, and gross hematuria is relatively infrequent. The common malignant tumors of infants, as Wilms' tumor or sarcoma of the bladder or prostate gland, infrequently produce gross hematuria. The former usually is recognized by the detection of an abdominal mass, whereas the latter produces urinary obstruction.

In young adults and persons up to the age of forty, gross hematuria is most commonly a manifestation of infection in the form of pyelonephritis or cystitis. The infection is most commonly produced by organisms belonging to the colon-typhoid or staphylococci groups; tuberculous infections are also common in this age group. Gross hematuria associated with renal or ureteral colic is not uncommon in the presence of renal or ureteral calculi. Neoplasms of the urinary tract are relatively uncommon in this age group.

After the age of forty years, gross hematuria as a result of neoplasms of the kidney, ureter or bladder becomes more frequent. In men of this age group, prostatism, both benign and malignant, is a common cause of hematuria; furthermore, the incidence of gross hematuria is greater in benign prostatic hyperplasia than in prostatic carcinoma. Infection, both specific and nonspecific, and urinary calculi are less common causes of gross hematuria in this age group.

A detailed description of the nature of the hematuria may help to localize the site of the lesion. In males, it should be determined whether the hematuria is initial, terminal, total or independent of micturition. Initial hematuria is characterized by the appearance of blood only at the start of micturition; during the act the urine becomes clear. Initial hematuria is usually produced by prostatism or lesions in the prostatic urethra. In such conditions, blood or blood clots accumulate in the prostatic urethra; when urination is initiated the initial urine is bloody and the remainder clear. In terminal hematuria, clear urine is passed until termination of the act, when the urine become bloody. Terminal hematuria may result from prostatism or lesions in the prostatic urethra; in such instances, the sudden con-

From the Section on Urology, Mayo Clinic, Rochester, Minnesota.
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traction of the accessory muscles of micturition is responsible for the terminal hematuria. Rarely vesical neoplasms may be traumatized by the contraction of the bladder and produce terminal hematuria. In total hematuria the urine appears bloody throughout micturition. Total hematuria is usually produced by lesions of the kidney and ureter. The blood enters the bladder and becomes well mixed with the urine. Lesions in the bladder likewise may result in total hematuria. Rarely lesions of the prostatic urethra will bleed into the bladder and result in total hematuria. Bleeding independent of micturition is produced by lesions situated external to the external sphincter.

The color of the hematuria may be of some help in diagnosis. Dark brown urine usually results from bleeding lesions in the upper part of the urinary tract whereas bright red urine is usually associated with lesions in the lower part of the urinary tract. It may be extremely difficult to determine whether bleeding arises from the urinary or genital tract in females; however, careful catheterization and examination of the urine will usually settle the question.

Particular attention should be paid to certain phases of the physical examination of a patient who complains of gross hematuria. Renal enlargement due to neoplasm, hydronephrosis, cyst or polycystic kidney may be detected. Tenderness in the flank, a result of infection, may be elicited. Careful palpation of the supraclavicular area should be carried out because hypernephroma may metastasize to the lymph nodes at that site. The appearance of a left varicocele late in life is suggestive of a neoplasm of the left kidney. This condition is the result of the anatomic relations of the left spermatic vein. Neoplasms of the kidney tend to invade and block the renal vein. Inasmuch as the left spermatic vein empties into the left renal vein, the blockage of the latter vein is transmitted to the spermatic vein and results in varicocele. If the neoplasm invades the inferior vena cava, dilated abdominal veins may be visible.

The suprapubic area should be examined carefully in order to detect the presence of a distended bladder, tenderness that may accompany cystitis, or a mass due to a vesical neoplasm. By means of a careful rectal examination of a man, a diagnosis of benign prostatic hyperplasia or prostatic carcinoma may be made. By rectal palpation it may be impossible to distinguish prostatic carcinoma from tuberculous prostatitis or prostatic calculi, and other diagnostic aids may be necessary. Infiltration of the base of the bladder by vesical neoplasm may be readily detected by rectal palpation.

In cases in which the patients are females, considerable information may be obtained by vaginal examination. In this manner, infiltration caused by vesical neoplasm and tenderness caused by cystitis may be detected. It may even be possible to palpate a calculus low in the ureter by vaginal examination.

Examination of the external genitalia may aid in the diagnosis. The presence of urinary tuberculosis may be suggested by noting evidences of genital tuberculosis, inasmuch as these two conditions are frequently concomitant. Tuberculosis of the vas deferens and epididymis usually results in enlargement, hardening and nodularity of these organs. A urethral neoplasm may be palpable along the course of the urethra.

Every patient complaining of gross hematuria requires complete urologic investigation by a capable urologist. It is axiomatic that in addition to cystoscopy such patients will require investigation of the upper part of the urinary tract, either by intravenous urography or retrograde pyelography. The source of hematuria in a man who has prostatic hyperplasia may indeed be prostatic, but such a patient belongs to the age group in which bleeding may arise from a renal neoplasm.

Hematuria is rarely an emergency unless it is prolonged and exsanguinating in character. Until the time when the patient can be placed in proper hands, there are several steps that may be taken. If it is suspected that the bleeding arises from the kidney or ureter, the patient should be put to rest in bed and necessary narcotics given to relieve pain. A large fluid intake should be urged to prevent the formation of clots and subsequent "clot colic." If the bleeding is vesical or prostatic in origin and associated with the formation of clots, an effort should be made to remove the clots. Clots in the bladder act as a foreign body and produce vesical spasms which aggravate the bleeding. The clots may best be removed by a urethral catheter and syringe.

EXPERIENCES IN THE TREATMENT OF VOLVULUS OF THE SIGMOID

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WHILE volvulus of the sigmoid does not occur very commonly in this part of the country,* the operative mortality rate reported by many clinics is as high as 30 to 60 per cent. As no one seems to have had an extensive surgical experience with this condition, I am offering a review of the literature and my own limited personal experience, with suggestions as to how these cases may be treated to lower this mortality.

Recently Bruusgaard has described a nonoperative method for reduction of the torsioned and distended sigmoid loop by inserting a tube per rectum past the site of torsion of the volvulus. By means of a proctoscope, the examiner notes the condition of the bowel, the appearance of the mucous membrane, and the blood supply at the site of the torsion. When the site of torsion has been located, a lubricated rubber rectal tube, 60 cm. long and about the thickness of a finger (6 to 10 mm. in diameter), is guided past the site of the obstruction. If the treatment is successful, there is a forceful evacuation of flatus and thin stool and the patient feels instant relief. The result may be verified by x-ray examination.

Bruusgaard found the site of torsion of the sigmoid to be 15 to 25 cm. from the anus. After reduction of the volvulus, the tube should be sewed to the anal ring and left for two or three days to prevent recurrence. While there is danger of perforation of the bowel and the possibility that one may fail to operate upon patients with strangulation and gangrene, Bruusgaard reports a mortality of only four in 136 treatments, which makes the above objections seem more apparent than real.

The above procedure would seem to be a valuable one, as experience is gained with it. I have had occasion to use it only two times. In one case, the return of bloody fluid through the inserted tube gave unsuspected evidence of a strangulated volvulus which was verified at operation. In the other case, the patient had a volvulus of the sigmoid together with a carcinoma of the ascending colon just above the cecum. The amount of flatus removed by rectal intubation of the volvulus was not proportionate to the amount of gas seen by a flat plate of the abdomen. The true condition was found at abdominal exploration.

In cases of volvulus of the sigmoid in which there is *no* gangrene or any other severe bowel damage, at the site of torsion, Bruusgaard advises reduction of the volvulus by proctoscopy and intubation, and in a free period of the disease, doing a closed resection of the sigmoid. Wangensteen, at the University of Minnesota Hospitals, has treated two cases of the volvulus of the sigmoid in this manner with successful results. In our experience, however, in the last four cases of volvulus seen, this procedure would have been feasible in only one case, as the blood supply to the volvulus was compromised in three cases.

The usual operative procedure in cases of volvulus has been a bowel resection of the Mikulicz exteriorization type. In my experience, this operation has proved to be a bad one in cases of volvulus of the sigmoid. It is true that one patient (Ancker Hospital, No. 28962) also had Parkinson's disease and another (Ancker Hospital, No. 92058) was elderly, feeble and debilitated, but this high mortality in similar cases has been the experience of others.

Bruusgaard reported five patients with volvulus of the sigmoid treated by exteriorization by the method of Mikulicz; all died. One reason for this mortality is that in cases of volvulus of the sigmoid, the site of the torsion is so distal in the sigmoid flexure that, in doing a Mikulicz resection, there is some risk of producing too much pull in the efferent loop of the sigmoid colon, with resultant gangrene and peritonitis. We have had one case where the efferent loop subsequently retracted into the peritoneal cavity, causing peritonitis and death. To correct this, Bruusgaard recommends that after resection of the gangrenous sigmoid, the distal stump be inverted and buried and the proximal part be brought out as a

(Continued on Page 685)

*In 1946 and 1947, three of the largest hospitals in Saint Paul, Minnesota, record only eight cases of volvulus of the sigmoid: Ancker Hospital (850 beds) seven cases, St. Joseph's Hospital (262 beds) one case, and Miller Hospital (275 beds) no cases.

EXPERIMENTAL STUDIES OF LIVER AND THORACIC DUCT LYMPH

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RELATIVELY few studies have been made of lymph, not because of lack of interest in the subject, but because it has been difficult technically to obtain even small samples of lymph. For example, there is only the most meager information concerning the quantity of lymph coming from a particular organ, such as the liver, or concerning its quantity and composition from a normal animal under conditions such as those following the digestion of a meal.

The object of this study was to investigate hepatic lymph under various experimental conditions. This meant the finding of a method of obtaining a continuous flow of hepatic lymph, a flow that continued even after recovery of the animal from anesthesia. Several difficulties stood in our way: threadlike smallness and delicateness of lymphatics, the almost colorless transparency of liver and lymph and lymphatics, the presence at frequent intervals of valves which interfere with the introduction of a cannula, and the fact that when the lymphatic was punctured it collapsed to the point of invisibility. Moreover, the rate of flow of hepatic lymph is very slow, and the lymph clots rapidly. Our first problems, therefore, were to find a flexible small cannula in which lymph would not readily clot, to develop a technique of cannulation, and to find the proper place to cannulate for hepatic lymph.

The animal used in this study was the dog. Flow of hepatic lymph was measured in thirty-three dogs, twenty-two of which had recovered from anesthesia. Flow of lymph from the thoracic duct was measured in twenty-two dogs after their recovery from anesthesia. The best lymph flow was obtained from young, growing dogs.

The cannula used consisted of a length of capillary size plastic tubing, long enough to be brought out through a stab wound. The tubing was a polyvinyl resin tubing, manufactured under the trade name "transflex" (size 24).* This tubing is not only flexible, but transparent, elastic and smooth-walled. It can be cut easily and may be sterilized by boiling. Transflex tubing of this size is quite inert biologically. Clotting of lymph within the tubing does not readily occur.

After the presenting surface of the lymphatic to be cannulated had been stripped free of overlying tissue, a tiny hole was cut in it. The hole was held open by a fine seeker of blue glass; and the tip of the plastic tube, which was cut on a bevel of about 45 degrees, was introduced beside the seeker into the hole. After the tube was in place, the seeker was withdrawn, and a previously placed ligature was tied about the lymphatic and tubing.

Liver lymphatics emerge from the liver at its hilus and, passing caudally along the free edge of the gastrohepatic ligament, enter a main hepatic lymph node at the caudal end of the foramen of Winslow. These lymphatics are extremely small, thin-walled and numerous, and anastomose with each other freely. Several large efferent lymphatic trunks emerge from the hepatic lymph node and pass dorsally to join the cisterna chyli in the retroperitoneal region. We introduced our cannula through the largest of these efferent lymphatics and occluded the remaining efferent trunks by the mass ligature which held the plastic tube in place. Possible contamination of lymph from the upper part of the duodenum and the pancreas was prevented by one or more mass ligatures around lymphatics entering the hepatic lymph node at its caudal end.

The thoracic duct was usually cannulated behind the descending aorta rather than at the usual site where it empties into the left subclavian vein. Because there are no valves in the thoracic duct, the tubing could in most cases be slipped down the duct until its tip was in the cisterna chyli.

In the trained dogs, hepatic lymph usually flowed for a day and often for as long as two and a half days. Thoracic duct lymph flowed for as long as eight days. The usual flow for the average-sized young dog was 280 c.c. of hepatic lymph and 700 c.c. of thoracic duct lymph for twenty-

This is an abridgment, in part, of a thesis submitted by Dr. Cain to the faculty of the graduate school of the University of Minnesota in partial fulfillment of the requirements for the degree of M.S. in Medicine.

Dr. Cain is a Fellow in Medicine and Drs. Grindlay, Bollman and Flock are with the Division of Experimental Medicine, Mayo Foundation, Rochester, Minnesota.

*The transflex tubing used in this study was furnished by the courtesy of the manufacturer, the Irvington Varnish and Insulator Co., Irvington, New Jersey.

four hours. These dogs lost weight rapidly during the time the lymph fistula remained open and signs of dehydration and hypoproteinemia developed, which in the case of the dogs with fistulas of the thoracic duct were controlled only by constant intravenous reinjection of lymph.

There was evidence that we obtained virtually all the hepatic lymph by the technique of liver lymphatic cannulation. For example, T1824 dye, which had been injected into the several lobes of the liver in several dogs, appeared in hepatic lymph but not in thoracic duct lymph. Also, after the common duct had been obstructed, the bilirubin of hepatic lymph increased rapidly, while bilirubin did not appear in thoracic duct lymph until it appeared in the blood. We believe also that our technique of cannulation of the thoracic duct permits us to obtain almost all the lymph coming from below the diaphragm.

The protein content of hepatic lymph was high as compared to that of thoracic duct lymph. Thoracic duct lymph had a protein content about half that of plasma, while hepatic lymph had a protein content five sixths that of plasma. Our experiments showed that intravenous infusion of fluid, salt and glucose, comparable in volume to that present in the large amount of lymph lost, did not restore dogs to a normal state. Present evidence indicates that a loss of hepatic lymph protein, either from drainage of the liver lymphatics or from drainage of the thoracic duct (into which the liver lymphatics empty), produces loss of weight and weakness.

Hepatic lymph was transparent and had a faintly yellow color. During anesthesia the bilirubin content and depth of yellow color increased. After a meal, thoracic duct lymph became white, and hepatic lymph remained clear. Both liver and thoracic duct lymph contained slightly more glucose and chloride than plasma but the same amount of inorganic phosphate. The alkaline phosphatase content of liver and thoracic duct lymph was about half that of plasma. Exercise increased the flow of hepatic lymph approximately 80 per cent and that of thoracic duct lymph 200 per cent. A meal increased both liver and thoracic duct flow approximately 75 per cent, and intravenous infusion of solution of glucose likewise increased both liver and thoracic duct lymph flow 75 per cent. Two dogs with experimental chronic cirrhosis of the liver had greatly dilated liver lymphatics and an output of hepatic lymph ten to twenty times greater than normal. This and other experimental observations suggest that ascitic fluid may be formed by leakage of hepatic lymph rather than by transudation from tissues of the portal bed. Obstruction of the liver lymphatics was produced on one occasion. Although the biliary tract was unobstructed in this dog, jaundice resulted. This experiment suggests the possibility that jaundice in cases of carcinoma invading the gastrohepatic ligament, in which obstruction of the bile ducts cannot be demonstrated at necropsy, may be caused by carcinomatous blockage of liver lymphatics.

Summary

By using flexible plastic (polyvinyl resin) tubing of small diameter, as cannulas, we have been able to cannulate the extrahepatic liver lymphatics in twenty-two dogs and the thoracic duct in twenty-two dogs and obtain a continuous flow of lymph after the animal had recovered from the operation. Clotting of lymph appears not to occur rapidly in such tubes.

By cannulating the main efferent lymphatic of the liver lymph node and occluding the other efferent lymphatics, we have been able to obtain most of the hepatic lymph. By cannulating the thoracic duct behind the descending thoracic aorta, we usually have been able to slip the plastic tube down to the cisterna chyli and obtain most of the abdominal and hind leg lymph.

The usual flow of hepatic lymph was 280 c.c. for twenty-four hours, of thoracic duct lymph 700 c.c. Severe loss of weight and signs of dehydration and hypoproteinemia developed rapidly. Flow of liver and thoracic duct lymph was increased by exercise, by feeding of a meal and by intravenous infusion of saline or glucose solution.

The protein content of hepatic lymph is about double that of thoracic duct lymph and nearly equal to that of plasma. Chloride and glucose content of both liver and thoracic duct lymph were slightly high as compared to plasma, with inorganic phosphate the same and alkaline phosphatase lower.

Two dogs with chronic experimental cirrhosis of the liver had very large outputs of hepatic lymph.

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE STUDY

E. W. MINTY, M.D., O. L. McHAFFIE, M.D., and A. H. WELLS, M.D.
Duluth, Minnesota

DR. V. J. PACIOTTI: A sixty-three-year-old housewife (Case No. 3218) was admitted to this hospital on September 13, 1945, complaining primarily of vomiting. She expired twenty-one days later. Her present illness appeared to begin two days before admission to the hospital, when she suddenly began vomiting about one hour after her noon meal. There was a moderate chill at the time of the onset. At first there was no pain. She had a bad taste in her mouth. Her bowel movements remained normal, and there was no diarrhea or constipation. The nausea and vomiting continued so that she could not retain anything on her stomach up until the time of her admission. A physical examination revealed a well-nourished, elderly, alert white woman, complaining of vomiting and very little abdominal pain. There was decreased excursion of the right chest as compared with the left, but no râles or areas of consolidation. The heart appeared to be enlarged to the left by 2 or 3 cm.; the rate was 120 per minute, and sounds were rather feeble. There were no murmurs. The apex was felt in the midclavicular line and the sixth intercostal space. The white blood cell count was 15,700, and her blood pressure was 120/80; temperature was 99.2° F., and the urinalysis was normal. There was some tenderness in the mid-abdomen with marked rebound tenderness and no muscular rigidity or abdominal distension.

The past history revealed that the patient had had attacks of right upper quadrant pain over a period of about two years, beginning thirty years ago. These shooting pains went through to her back, and she became quite ill but never consulted a doctor.

The clinical diagnosis was acute appendicitis. The immediately excised appendix was considered by the pathologist to be free from inflammatory change. However, the surgeon felt that it was completely reduplicated upon itself, and the source of some difficulty. At the time of the appendectomy, the gall bladder was found to be obliterated and surrounded by numerous old fibrous adhesions. No stones were found in it, and none could be felt in the common duct. No other pathologic condition was found in the pelvis or abdomen.

Postoperatively, she continued to be distended and vomited small amounts two or three times daily. On September 23 and 25, roentgenograms (Fig. 1) revealed a "stepladder" type of severe distension of the small intestines which were interpreted by Dr. A. L. Abraham as being probably due to intestinal obstruction. She continued vomiting two or three times a day and noticed on occasions some burning pain in the lower abdomen. On September 23, 500 c.c. of liquid fecal matter were vomited. On September 24 she had some mild abdominal pain and was very weak. An x-ray examination revealed some elevation of the right diaphragm. There were large bowel movements described by the nurse. On September 29 she was still vomiting occasionally. On October 1 her temperature rose to 102.8° F. The white blood cell count was 22,000. On October 2, under local and general anesthesia, through the partially eviscerated operative wound, a small loop of ileum was found protruding between the edges of the fascia and muscle. This was returned to the abdominal cavity, and the wound was closed with through and through chromic sutures. There appeared to be an improvement in the next twenty-four hours, but then she rapidly lost strength and expired on October 4.



Fig. 1. "Stepladder" pattern of distension of small intestine.

DR. A. H. WELLS: The case is now open for diagnoses.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

PHYSICIANS: Gallstone ileus. Carcinoma of colon with obstruction. Acute generalized peritonitis with paralytic ileus complicating the appendectomy.

DR. A. H. WELLS: Dr. Moehring is right. The patient did have a gallstone ileus. An oval, finely granular surfaced calculus, measuring 4.5 cm. in one diameter and 3 cm. in the other, was found at the necropsy, tightly wedged in the ileum (Fig. 2) 4 feet above the ileocecal valve. There was, in addition, a pinpoint perforation of the iliac wall 25 cm. proximal to the site of the calculus, and a severe acute generalized peritonitis with 1,000 c.c. of liquid purulent exudate dispersed through the peritoneal cavity. The site of perforation was due to erosion of the calculus through the gut wall possibly on about October 1 when there was a severe rise in



Fig. 2. Gallstone calculus in ileum. Also, a probe is shown passing through cholecysto-jejunostomy fistula.

temperature to 103° F. There was a huge healed cholecysto-duodenal fistula with surrounding dense old fibrous adhesions and mildly distended common and cystic ducts. The only other significant changes were the usual toxic effects of the peritonitis. Dr. Moehring, what led you to the diagnosis?

DR. H. G. MOEHRING: There was a past history of gallstone colic, followed many years later by a sudden attack of intestinal obstruction of unknown etiology, with fecal vomiting and a typical roentgenogram of small intestine obstruction.

Discussion

DR. E. W. MINTY: Gallstone ileus is one of the late and severe complications of cholelithiasis. In spite of the purely mechanical nature of the obstruction, it carries a mortality of from 40 to 50 per cent, thus warranting a better understanding of its nature. I will review briefly some of the pertinent facts relative to a gallstone ileus for your consideration.

Etiology

Gallstone ileus occurs in approximately 2 per cent of all obstructions of the small bowel. Many reports have a very small number of cases, and as it is difficult to determine the exact incidence of gallstone ileus, I think it should be stated that it is probably much more common than we are aware of at the present time. Wakefield, Vickers and Walters[4] in a study of 176 cases of cholecysto-enteric fistulas found only ten cases of ileus; therefore, it is evident that the majority of the gallstones which eroded into the lumen of the bowel were passed through the rectum without causing symptoms. Their conclusions were that the presence of biliary fistulas must be a fairly common condition, and just has not been recognized in the past. As nearly all cases of gallstone ileus are preceded by cholecysto-enteric fistulas, I think it is well that we review briefly the etiology and pathogenesis of this condition before discussing gallstone ileus in detail.

Cholecysto-enteric fistulas are late complications of chronic cholecystitis and cholelithiasis.[2] They may rarely occur secondary to perforation of a duodenal or gastric ulcer, secondary to surgical trauma, and secondary to rupture of an acute cholecystitis with abscess formation and erosion through the duodenum or elsewhere in the bowel. However, the majority of cholecysto-enteric fistulas are between the gall bladder and the duodenum. As this condition is a late complication of chronic cholecystic disease, we would expect to find it in elderly people. Most of the cases reported are in individuals past fifty, with the majority between sixty and seventy years of age, and the incidence seems to be about 4 to 1 for women, as compared to men, which is approximately the same as cholecystic disease. Bear in mind that a cholecysto-enteric fistula has to be present to form a gallstone ileus.

A stone is extruded into the bowel, most likely into the duodenum, passes down the small bowel where it may lodge anywhere, producing an obstruction. A stone up to 2.5 cm. in diameter will probably pass without causing a definite obstruction; however, smaller stones have been known to produce definite bowel obstruction, especially if they have sharp edges which may catch on the lining of the bowel and stop the progress of the stone. The stone may lodge anywhere from the stomach to the rectum, but in the majority of the cases, it lodges in the terminal ileum, as this has the narrowest lumen of any portion of the intestinal tract.

Diagnosis

The text book picture of sudden onset of acute upper intestinal obstruction in a patient, generally an older woman, with a past history of gallstone colic and typical food dyscrasias, should always lead to including calculary ileus in the differential diagnosis. Symptoms of a definite "gall-bladder" attack preceding obstruction occur in approximately 50 per cent of the cases. Some patients may give a history of bowel obstruction or obstipation, which is characteristic of partial obstruction. Complicating the matter is the fact that many elderly people have periods of obstipation due to atonic bowel action and frequently take laxatives for this common complaint. They may or may not have had a previous history of gall-bladder difficulties. Partial obstruction is usually intermittent, and may be present for variable periods of time. There have been cases reported where partial obstruction symptoms were present for over a year before the true diagnosis was made.

The stone may cause a partial obstruction as it progresses, and then it may loosen up and pass on down the bowel, and thus relieve the symptoms, to lodge in a lower portion and produce a partial obstruction there, and the process is repeated until finally the stone reaches the terminal ileum, where it is apt to produce complete bowel obstruction. The chief complaint of these elderly people is that their bowels do not work right. They have a tendency to be partially constipated, and they cannot get their bowels to function properly. They have no distension, very little pain, and as a rule do not appear acutely ill. They may or may not have an elevation in leukocyte count, depending upon the condition of the bowel, as gallstone ileus is purely a mechanical proposition, and since many of them are only partially obstructed, there is very little distension of gas in the proximal ileum.

The biggest factor in making the diagnosis in gallstone ileus is first to suspect it, and second, to rule it out definitely in all elderly people suffering from partial bowel obstruction or definite bowel obstruction. The majority of these patients have been operated upon with a diagnosis of a bowel obstruction without even suspecting or even diagnosing the nature of the obstruction preoperatively, and as most of these people are elderly and in very poor health, the operation results in a fatal termination. In many instances, only at autopsy is the true diagnosis determined. Therefore, any patient who has symptoms suggestive of a partial obstruction should be questioned very carefully relative to any history of chronic gall-bladder disease or of previous gallstone colic. Occasionally a patient will give a history of having passed a gallstone by rectum. If there is such a history, by all means one should think of a gallstone ileus in these cases.

Once the condition is suspected, it can be definitely determined by x-ray, preferably before complete obstruction occurs. Rigler[3] states that all cases can be diagnosed by x-ray study, if the time is taken to work them out. The only accurate method of making such a diagnosis is by x-ray, as the symptomatology and the physical findings of these cases are very misleading and very meager. The diagnosis by x-ray is usually based on the finding of air in the bile ducts, due to cholecysto-enteric fistulae. Sometimes filling of the bile ducts with barium will occur when barium is given by mouth to determine the cause of partial obstruction; however, this sometimes occurs normally with a large patent ampulla of Vater, which allows the barium to go up into the ducts, and unless the fistula is definitely seen, this cannot be relied upon too strongly. Very rarely, pathogenic organisms within the bile ducts and gall bladder will produce air in the bile ducts, but this is so rare that I believe that finding of air outlining the bile ducts is very diagnostic of a cholecysto-enteric fistula. At times an opaque stone may be seen in the small bowel with distension proximal to it. However, as most of these obstructions are of partial nature, the finding of air proximal to the stone is rather unusual. The patient with a known large radiopaque gallstone, whose calculus is not to be seen in the gall-bladder area at the time of onset of symptoms of upper intestinal obstruction, very likely has passed the calculus to the small intestine. At times during a barium enema, the barium will flow into the terminal ileum and definitely outline the stone. Recently, thorium chloride in very dilute solutions has been given by mouth, and in three or four hours it may definitely outline the gallstone in the bowel. Apparently, this does not harm and is not contraindicated, as is barium by mouth, in cases of bowel obstruction. As early diagnosis is imperative for the proper treatment of this condition in these patients with gallstone ileus, it is imperative that first of all the condition be suspected, and secondly, that it be considered in every case in an elderly individual with a history of partial or complete bowel obstruction.

Treatment

The treatment of a gallstone ileus is always surgical. The Wangensteen and Miller Abbott tube, used therapeutically, is definitely contraindicated, except as an adjunct to surgical treatment. In view of the fact that the high mortality is due to inability to make an accurate early diagnosis, and to procrastination on the part of the physician as well as the patient, it is imperative that surgery be instituted as early as possible in these cases. One is justified in some preoperative preparation of the patient, depending entirely upon the patient's condition, but procrastination beyond a few hours is definitely shown in a high mortality rate.

There are three surgical procedures which are followed:

1. One may attempt to milk the stone into the cecum where it will pass by the rectum, which can be done in some instances if the terminal ileum distal to the stone is massaged and dilated as much as possible. Kapel,[1] of Copenhagen, had two such cases and was able to pass the stone into the cecum without opening the small bowel, by meticulously massaging the terminal ileum until it dilated sufficiently for the stone to be pushed into the cecum. He recommends, however, if the stone is not passed by rectum within four days, that it be removed digitally.

2. The procedure most commonly employed is to do an open enterostomy after the stone is moved proximally until normal bowel can be opened over the stone. The bowel is opened with a longitudenal incision, and closed transversally to prevent constriction of the lumen. An enterostomy approximal to the site of operation is sometimes performed.

3. Should the bowel be gangrenous, requiring a resection of that portion of the ileum, this is done and continuity established by a side-to-side anastamosis, as this is considered the much safer type, with or without an enterostomy proximal to the site of anastamosis. If the condition of the patient is critical enough to warrant it, a Mickulitz exteriorization should be done as a life-saving procedure. Before closing the abdomen, the proximal portion of the bowel should be checked for any other stones that may be present, as multiple stones in the intestinal tract are not at all unusual, and, if found, they should be removed. The gall-bladder area should be inspected and the fistula tract examined to see what

the condition of the gall bladder is, and whether or not other stones are present in the gall bladder. As most of these patients are in very poor condition, it is unwise to attack the fistula or the gall bladder at the time of the relief of the obstruction. If an acute cholecystitis exists, a drain should be placed near the gall bladder, so that if a rupture occurs, the abscess can drain outside. As a large percentage of these cases are due to single cholesterol stones, and, therefore, no other stones remain in the gall bladder, the feasibility of taking down the cholecysto-enteric fistula is not indicated and not justifiable, as most of them close spontaneously anyway; however, if multiple facetted stones are present in the gall bladder, a cholecystectomy should be very seriously considered, and done later, preferably before the patient leaves the hospital.

In conclusion, the 40 to 50 per cent mortality in gallstone ileus is due definitely to indefinite symptoms, to procrastination on the part of the patient as well as the doctor, and to the doctor's failure to make an early diagnosis of the condition as it exists. Undoubtedly, the risk involved with the age and condition of the patient also is a very definite factor in this high mortality.

The only thing that can be done in a preventive way is that every individual in whom gallstones have been diagnosed should be definitely advised to have a cholecystectomy done, before reaching the fifth and sixth decades of life, to prevent this and other highly fatal complications from occurring.

Dr. O. L. McHaffie: These cases of gallstone ileus or intestinal obstruction due to the presence of gallstones in the small bowel are of rather infrequent occurrence, to the extent that many surgeons will not have the opportunity of seeing them. However, after having seen a few cases, the surgeon will recognize a rather definite pattern of signs and symptoms. The important features to be remembered are (1) The patients are usually past fifty years of age and have had gallstones over a long period of time, with or without recurrent attacks of cholecystitis and cholelithiasis. (2) There is usually an attack of acute cholecystitis with cholelithiasis during the period that the stone is sloughing through the fistula between the gall bladder and bowel. (3) After the gallstone has sloughed through the bowel, the patient has an interval of relief. The gall bladder drains, and the surgeon is misled into the belief that he is dealing with an acute cholecystitis which is subsiding. Most surgeons prefer to treat these acutely inflamed gall bladders conservatively, and for this reason they are lulled into a false sense of security during this quiet interval, during which time the patient is insidiously developing intestinal obstruction. As in all cases of intestinal obstruction, it is this delay, while symptoms are masked, which leads to error on the part of the surgeon, and to disaster. It is this deceptive quiescent period in these cases which is important and should remind all surgeons, in dealing with a case of acute cholecystitis and cholelithiasis, of the presence of a possible fistula between the gall bladder and bowel with the presence of gallstone ileus.

Conclusions

We have presented the difficult diagnostic case study of a sixty-three-year-old woman who suddenly began vomiting and continued to do so until her death three weeks later. She had a moderate leukocytosis and fever, x-ray evidence of small intestinal obstruction, and a past history of gallstone colic. At the necropsy a large gall-bladder calculus was found blocking the lower ileum. There was a perforation of the ileum proximal to the calculus and an acute generalized peritonitis.

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HALF OF PERSONS EXAMINED NEED MEDICAL ATTENTION

More than half of the 419 persons, 219 men and 200 women, who have been examined in the University of Minnesota's new cancer detection center during the first three months of its operation were found to have abnormalities calling for medical attention, Dr. David State, director of the center, reported June 9.

Referred to their personal physicians for treatment after examination at the center were 216 persons, some of whom, according to Dr. State, were suffering from two or even three different conditions requiring medical service.

In examining the 419 men and women who visited the center during March, April and May, University medical specialists discovered nine definite cases of cancer, twenty-seven "suspicious" tumors requiring further diagnosis, ninety-five precancerous lesions or sores, fifty-one benign tumors and eighty-eight nontumorous conditions, such as high blood pressure, requiring immediate attention by a physician.

Doctors assigned to the detection center found that 203 of the 419 persons examined were in good health and not in need of treatment. However, these currently well patrons were advised to return to the center every six months in order to assure themselves that they are still free of cancerous or precancerous conditions.

More than 8,000 applications have been received for admission to the center, and at the present rate at which the center is able to operate, it will require several years to examine all applicants. Anyone who has made an appointment date and who cannot report on the day set is asked to notify the center at least four or five days before the appointed day so that a replacement can be made.

The center is open to men and women of Minnesota in the age bracket in which cancer occurs most frequently, forty-five and over, who are currently without symptoms of cancer. Each person examined is asked to pay a $5 registration fee, but if the patient is unable to meet the charge, he is asked to pay as much of the fee as he can.

Case Report

COR BILOCULARE, TRANSPOSITION OF GREAT ARTERIES, PULMONARY STENOSIS, SITUS INVERSUS, ET CETERA, IN AN ADULT

ROBERT L. NELSON, M.D., and ARTHUR H. WELLS, M.D.
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IT is calculated that there are approximately 3,000 infants with surgically correctable congenital cardiac defects born every year in the United States. This number, plus a great back-log of children who have not had surgical care, emphasizes the importance of greater interest and knowledge in this special field on the part of the medical profession. Possibly 95 per cent of the surgically treated congenital cardiac anomalies occur as one of three anomalies: patent ductus arteriosus, pulmonary stenosis, and coarctation of the aorta.

Cor biloculare is indeed a rare anomaly,[13] the victims of which seldom survive infancy. Thus far, cardiac surgery appears contraindicated. The frequency of dextrocardia among the patients with these very serious cardiac anomalies is a repeated observation. A confusion of somatic and visceral dissociation in situs inversus is frequent. The variety of the associated anomalies of the heart and its vessels in cases of cor biloculare appears to be almost endless. We wish to add one more case of cor biloculare in an adult to the scanty literature[1-12] on this subject.

Case Report

M. T. was born a "blue baby" in September, 1919, and died on December 4, 1946, at the age of twenty-seven years and three months. On December 6, 1929, one of us (R.L.N.) examined him and made the following notes:

"This ten-year-old boy has been cyanotic all his life. He is of light complexion, but his skin varies from a dusky mottled color at rest to deeply cyanotic on slight exertion. The mucous membranes and the ear lobes remain dusky throughout the daily one-hour periods of bed rest.

"The heart is of the right mid-line type with a diffuse apex beat at the right sternal margin. There is a rough systolic murmur heard over the entire precordium, maximum over the lower sternal area. A distant rushing systolic sound is heard over the base of the heart and is not transmitted along the great vessels of the arch of the aorta. No thrills are palpable. Fluoroscopically, the heart is globular in shape and lies in the right mid chest (Fig. 1). The chambers are not clearly identified. Bronchovascular markings are relatively prominent. An electrocardiogram (Fig. 2) shows inverted P waves in all leads, a right axis trend with Q waves prominent in I and II and small in III. T waves are inverted in I and upright in II and III.

"Diagnosis.—(1) Congenital dextrocardia with complete transposition of the viscera; (2) congenital pulmonary stenosis; (3) congenital interventricular septum defect."

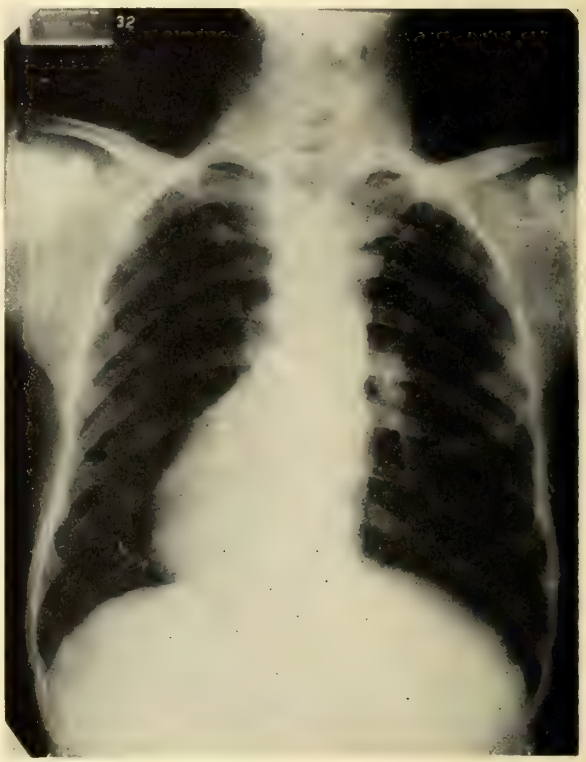


Fig. 1. Thoracic roentgenogram, revealing dextroposition and globular shape of the heart.

During his school years he was allowed all activities which he could tolerate, maintained a good scholastic standing and received special training in art.

When next examined on June 25, 1946, he complained of shortness of breath and painful feet. His feet had been sore since 1939 and empirin compound had ceased to afford relief from pain on walking. Shortness of breath had steadily increased during the past year, causing him to quit a defense plant job at Bridgeport, Connecticut, and return home. He got a job as a commercial artist in a large wholesale house and performed his duties in a satisfactory manner until October 22, 1946, when he developed severe painful edema of both lower extremities.

Examination showed a fairly well-developed and well-proportioned white male who appeared to be about twenty-one years of age (actual age, twenty-six). His ear lobes and all mucous membranes were cyanotic and

From the Departments of Electrocardiography and Pathology, St. Luke's Hospital, Duluth, Minnesota.

there was marked clubbing of the fingers and toes. His height was 68.5 inches (174.5 cm.) and his weight was 128 pounds (58 kg.). The retinal veins were large and deeply purple. The pupils were slightly dilated but reacted normally to light and accommodation. Aside polycythemia. The absence of right axis deviation in the electrocardiograms, however, was confusing. It suggested the equivalent of a right ventricular hypertrophy (left sided because of the dextrocardia) but this could not be corroborated clinically.

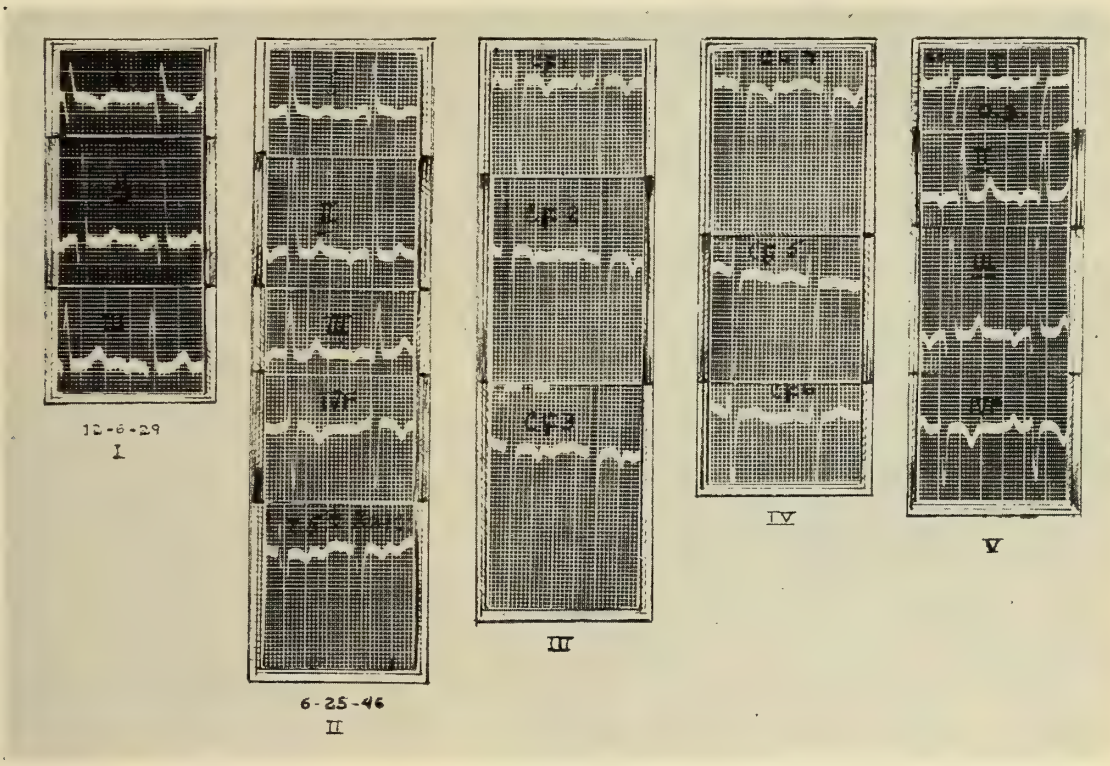


Fig. 2. Electrocardiograms as described in the text.

from moderate postnasal discharge and cyanosis, there was nothing unusual about the rest of the head and neck.

The thorax was rather thin and long. Movement was free and equal, and the lungs were clear. Mediastinal dullness extended 3 cm. to the left and 9 cm. to the right of the midsternal line. The apex beat was diffusely palpable about the fifth right intercostal space. There was a loud, harsh systolic murmur maximum at the second left intercostal space, widely transmitted down to the apex and up to the suprasternal notch and posterior chest, but not along the great vessels of the neck. A coarse thrill was palpable from the first to fourth ribs with maximum intensity at the third rib level at the left sternal margin. Blood pressure was 120/85 in the right arm and 120/90 in the left.

The liver edge was palpable 2 cm. below the left costal margin. The external genitalia were well developed, and the glans penis was moderately cyanotic. There was moderate cyanosis of the lower third of the lower extremities and tenderness over the metatarsal heads of both feet. Reflexes were all physiological.

The urine showed a trace of albumen. Hemoglobin was 19.5 grams. The blood Wassermann test was negative. The electrocardiographic pattern (Fig. 2) was basically unchanged from 1929. In the CF leads, T was inverted in 1, 2, 3 and 4 and slightly upright in 5 and 6. Reversing the right and left arm electrodes and placing the leg electrode on the right leg failed to give a less abnormal pattern, as did reversal of the positions of the chest leads. The diagnostic impression was unchanged from that of 1929 except for the addition of

Clinical Course.—The exertional dyspnea was controlled by pre-exertional ephedrine to the degree that he could walk several blocks instead of half a block without stopping to catch his breath. Digitalis alone was ineffective. More potent analgesics such as codeine and demerol relieved his foot pain for insignificant periods of time, so dehydration with ammonium chloride was tried. This relieved the foot pain but caused diffuse headache, nausea and vomiting, so it had to be discontinued. Mercurial diuretics produced the same effect. He had found that drinking beer also produced headache in from one to six hours and that this persisted in association with nausea and vomiting for thirty-six to forty-eight hours. The headache was not responsive to ergotamine tartrate or histamine but was abolished by inhalation of 100 per cent oxygen.

On October 18, 1946, he complained of severe pain in both ankles and feet. From the lower level of the calf to the level of the malleoli on both legs, the skin was a brilliant red, the area was edematous, and expansile pulsation was present. This was a severe bilateral erythromelalgia of unusual location. A request for study at the University of Minnesota Hospital was granted on November 1, 1946, by which time the erythromelalgia had subsided to a dusky hue and was not pulsatingly painful. It was deemed advisable to make such additional studies as were necessary to determine whether any surgical corrections could be employed. Also, means were to be sought for controlling the increasingly frequent and severe headaches.

Dr. Cecil J. Watson, of the University of Minnesota,

supplied us with a summary of the studies made at the University Hospital. The history and physical findings were essentially as previously outlined.

Examination of the blood revealed 19.3 grams of hemoglobin per 100 cubic centimeters and 8.5 million

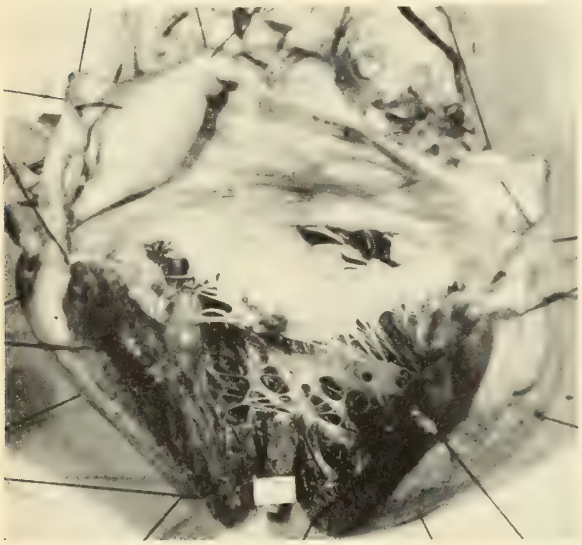


Fig. 3. Cor biloculare opened from the dorsal aspect, revealing common atrial and ventricular cavities, a bicuspid atrioventricular valve with an anomalus valve-like defect in the anterior leaflet and bacterial vegetations on the same leaflet.

erythrocytes per cubic millimeter. The hematocrit was 76 per cent. The coagulation time was 9 minutes and the bleeding time was 3 minutes. The total plasma protein was 7.7 grams per cent. The venous pressure was 9 cm. of sodium citrate. The arm to tongue circulation time was 21 seconds and that of the arm to lung was 8.5 seconds. Repeated attempts to perform blood volume determination were made, but were unsuccessful because of the high hematocrit and the resulting hemolysis of the blood.

Dr. Leo Rigler found complete situs inversus and some enlargement of the heart, apparently chiefly in the right ventricle. The pulmonary arteries were clearly visualized and the one on the right side was in normal position but rounded out in an unusual fashion. There appeared to be a dilated superior vena cava. Vascularization of the lungs was good. Dr. Helen Tausig of Baltimore suspected that there might be a single ventricle and advised deferment of operation until further knowledge of operative procedures on this type of lesion was obtained.

Five weeks after returning home, he failed to awaken in the morning. The heart tones were barely audible, and the pulse was not palpable. The heart rhythm was grossly irregular. The rate progressively slowed, and the patient expired without regaining consciousness.

Autopsy

The necropsy revealed the following significant abnormalities: situs inversus subtotalis, cor biloculare, transposition of the aorta and pulmonary artery, pulmonary stenosis, absence of ductus arteriosus, a streptococcic endocarditis on the atrioventricular valve leaflet, dilatation of cardiac cavities, chronic passive congestion of lungs, liver and spleen, and other lesser anomalies to be described.

The apex of the heart pointed to the right and its right border was 7 cm. to the right of the midsternal line while the left border was 4 cm. to the left. The pericardial sac had smooth, shiny, noninjected surfaces free from adhesions and contained only a few cubic centimeters of watery fluid. The heart weighed 410 grams. There were two cavities (Fig. 3). No trace of an interauricular or interventricular septum could be made out, except that there was a rudimentary, pouchlike space on the left lateral wall of the enlarged ventricular cavity. This rudimentary ventricle would barely admit the tip of the index finger and measured about 3 by 2.5 by 1.5 cm. The atrioventricular valves were two in number, each of approximately equal size. The anterior leaflet seen in Figure 3 had a rudimentary leaflet near its base with fairly normal appearing chordae tendinae distributed about its margins, so that this valve within a valve appeared to be competent. It measured 4 cm. in its greatest dimension. The chordae tendinae passed down into the rudimentary pouchlike ventricle described above and attached themselves to its inner surface. There were small granular, somewhat friable, pinkish gray vegetations at two sites on the atrioventricular leaflets as seen in Figure 3.

The aorta had its origin in almost the exact site of the usual origin of the pulmonary artery, i.e., anterior and slightly to the right, while the pulmonary artery had its origin posterior and slightly to the left. The aortic valve leaflets were not unusual. The aortic wall was distinctly thinner than average and had no atherosclerosis. The pulmonary artery leaflets were fused in such a fashion as to leave a slitlike opening which could be rounded out to about 0.8 centimeters in diameter. The margins of the slitlike opening were roughened, irregular, and had bits of calcium deposits which could be easily visualized on an x-ray plate of the removed heart. The first inch of the pulmonary artery averaged about half normal size, with a gradual increase in its diameter. This gradual dilatation extended up into the right pulmonary artery which became somewhat larger than normal. The left pulmonary artery branched off rather sharply and almost at right angles as a vessel about one-third of its normal size. The walls of all pulmonary arteries were extremely thin, measuring less than 1 mm. in thickness, and had the consistency of gutta percha. There were four principal branches off the arch of the aorta instead of three, there being a right subclavian and right common carotid instead of the usual right innominate artery. There was a ringlike marking with slight constriction of the lumen at a point just beyond the left subclavian artery at the site of the usual coarctation. No ductus arteriosus whatever could be found, not even a rudimentary band. The superior vena cava and inferior vena cava opened into the common atrial cavity on its left side, while the four small pulmonary veins, each averaging about 1 centimeter in diameter, opened separately to the right of the midline into the atrial cavity.

Evidence of confusion of development of the somatic and visceral elements, in this patient with almost complete situs inversus, were noted, in that the second portion of the duodenum was in its usual site to the right of the vertebral column and the common duct passed down to it in the usual manner. The aorta passed down the left side of the vertebral column, and the esophagus was to the right. Also, the attachment of the mesentery of the small intestine to the retroperitoneum was in its usual diagonal down to the right lower quadrant. The pancreas formed an irregularly rounded mass without a body or tail, measuring about 6 cm. in diameter. The spleen weighed 560 grams and was almost completely divided into two fairly normal shaped spleens. The microscopic examination revealed a most remarkable dilatation and congestion of endothelial-lined sinusoids, thin-walled arteries and veins throughout the myocardium. There was moderate evidence of chronic passive congestion in the lungs, liver, spleen and kidneys. The body had been embalmed so that

(Continued on Page 678)

A HISTORY OF MEDICINE IN SCOTT AND CARVER COUNTIES

Biographical Dictionary

(Continued from May issue.)

Carl Augustus Entrup was born June 16, 1857, in Shakopee. He received his literary education at the public school and at the Minnesota Valley Academy, and read medicine in connection with his other studies, under Dr. M. H. Manson. After the death of his father, he taught school one year and in 1877 went to the University of Michigan, where he spent three years as a medical student. After receiving his diploma, in 1880, he returned to Shakopee and there practiced medicine until the time of his death in 1893. He was a very skillful general surgeon who later chose to specialize in eye and ear diseases. In 1891, when a boy at Jordan suffered lacerations of the face in an explosion, Dr. Entrup was called upon by the physician in attendance, because he was the only man in Scott County or adjoining counties capable of performing the surgical operation required. He was a member of the Scott County Medical Society, and of the Minnesota State Medical Society.

Dr. Entrup died in Shakopee in 1893 of pneumonia.

J. C. Erickson came to Jordan in 1861. He was a medical graduate and practiced medicine in addition to running a large drugstore. He remained for thirteen years and probably longer.

C. J. Fisher located at New Prague in 1894.

H. P. Fischer, a graduate of the Detroit College of Medicine, settled in Shakopee in April, 1894. His card read:

Dr. H. P. Fischer, M.D.
Physician & Surgeon
Office over Duetch & Zettel's Drug Store
Speaks German fluently

He soon became known as a good surgeon, and in a manner he filled the place that Dr. Entrup's death had left empty. In June, 1895, he married Philomena Huck of Berlin, Ontario, his former home. His popularity brought him many patients in Shakopee and the small towns in that part of the county. During the period 1897-1900 he served as county physician, and in 1897 and 1899 held the position of city health officer for Shakopee. In November, 1899, he recommended to the board of county commissioners that an operating room be fitted out at the county poor house, as there was no such provision in the county and it was needed sadly. On motion, he was authorized to purchase the necessary furnishings.

Doctor Fischer died January 24, 1940, as a result of an automobile accident in Minneapolis.

Charles F. Forssman was born in Sweden, July 4, 1836, and in that country studied medicine and received his diploma. He came to America and to Carver County in 1869 and practiced until his death in Hancock Township in May, 1887.

J. H. Frank, an eclectic practitioner, was graduated from the Minnesota College Hospital in 1882 and from the American Medical College, St. Louis, in 1883. He followed his profession in Chaska from about 1886 to 1896. In February, 1891, he married Mrs. Lillian Marsland of Argyle. About 1897 he moved to Anoka, where he remained a number of years.

D. S. French was a physician of Shakopee in the 1860's. He died there in May, 1867, at the age of fifty-five years.

Louis Gothelf was an early practitioner in Waconia, where he settled about 1864. He practiced medicine until about 1868, when he opened a general store. His business failed in 1872; he may have left the county at that time. He was an active Democrat, and in 1867 he served on the board of county commissioners.

S. D. Grant located in Watertown, Carver County, about 1869. He purchased a drugstore there in 1872; his advertising card read as follows:

Dr. S. D. Grant
Physician & Surgeon
And Dealer in
Drugs and Medicines
Paints, Oils, Glass, Putty
Books & Stationery
Everything belonging to a first class stock
Physicians'
Prescriptions carefully compounded
Also a choice stock of
Family Groceries and
Provisions
Watertown Minnesota

During the years 1873 and 1874 he acted as deputy county physician. In October, 1874, he was killed by a boiler explosion at Watertown.

William A. Griffin was one of the pioneer doctors of the Minnesota Valley and the first resident physician in the county of Carver. He was born in New Hampshire and was a graduate of Dartmouth College. Probably he was not trained in any medical school, as he practiced under the Exemption Law of 1883. In 1857 he located at Carver, and remained there until his death in 1899. During these years he held many public offices. He became the first justice of the peace of Carver and was the village president and treasurer. He was postmaster for the year 1865-1866 and assessor in 1870. During the Civil War he served as examining physician to the Carver County Volunteers. He was elected county physician in 1872, and late in life he was appointed health officer of Carver. He owned a drugstore at Carver and for many years was a prominent businessman in the village. His death came from heart failure at the age of seventy-five years. He was at that time the oldest practicing physician in the Minnesota valley east of St. Peter.

Charles T. Grivelly, the son of Dr. James Grivelly (of Young America, Carver County, and later of New Market, Scott County), was a non-graduate, licensed in Minnesota in 1896. In 1892 he went to Switzerland to study medicine. On his return to Carver County he settled in Waconia, but in 1899 he returned to Young America, as the field had been vacated by his father. He was a popular young physician.

James Grivelli (known later as Grivelly) was graduated from the medical department of Iowa State University in 1887; and, having been licensed to practice in Minnesota in April of the same year (certificate No. 1375), he came from Arlington and settled in Young America, Carver County, in June. In the fall of 1888 he departed on a journey to Switzerland, his fatherland. The following March he returned to Young America, where he practiced until 1899. His large practice extended to Mayer, Norwood, Bongaard, Schnappsburg, Waconia, Heyd's Lake and Brownlin. Since he spoke German, he was popular among the German residents, as well as among the English speaking settlers. In 1893 he was elected to the pension examining board at Glencoe.

Dr. Haas was an early physician at Chaska about 1874.

John Habenicht, a graduate of the University of Prague, Bohemia, in 1864, came to Scott County, or thereabouts, soon afterward. After practicing two years in Jordan, in 1876 and 1877, he moved in 1878 to New Prague. After three years he returned to Jordan, where he was welcomed back by the German people of that town. His stay terminated after nine months, however, when he went into partnership with Dr. Landenberger of New Prague. Evidently patients were scarce, for in March, 1882, he left; and for four years he "played in various theaters in some of the large cities."

In February, 1886, Dr. Habenicht returned to practice in New Prague, and there with Dr. Landenberger opened a hospital for the treatment of chronic diseases. Their card read:

> Dr. J. Habanich [*sic*] Dr. J. Landenberger
> Habanich & Landenberger
> Physicians & Surgeons
> Are now ready to treat all kinds of Chronic diseases, male or female. The treatment will be at the New Prague Hospital, owned by the Doctors. All communications will be answered free of charge.

But even this project was not successful, and the doctor started out again to find a more fertile field. He moved to Glencoe in October, 1887, then to Waconia, then returned again to New Prague in December of the same year. He was licensed in Minnesota under the medical practice act of that year, and he held Certificate No. 1475 (R). In 1894 he was in Owatonna.

Harry A. Halgren practiced for many years in Watertown, beginning in the late nineties, and was well known in Hollywood and St. Bonifacius also. A non-graduate, he was licensed in Minnesota in 1896. In 1900 he was elected coroner of Carver County.

John B. Hall, a homeopathic physician, opened an office for practice in Shakopee in May, 1867. Previously he had been the proprietor of Hall's Homeopathic Pharmacy at Cleveland, Ohio. Not long after his arrival he suffered the loss of much property, including his office fittings, household furniture and library, in a fire.

Everett C. Hartley was a homeopathic physician who settled in Carver in January, 1886. He had been graduated from the Chicago Medical College in 1879, and he held Minnesota License No. 387 (R), issued on November 24, 1883. In the year following his arrival in Carver, he married Bertha Strache of that town. He was a very promising young physician and his practice grew rapidly. He drove a spanking team of horses, and was called to nearly every accident in that part of the county, including Chanhassen, East Union and Jordan, Scott County. He was often mentioned as a first-class man professionally, and he held many civic offices. In the years 1889 through 1891 he served on the Carver board of health, and in the period 1896 to 1900 was "the best coroner this county ever had." In 1897 he became a member of the pension examining board at Shakopee and continued in that office for several years. He prospered financially to the extent of building a new home, keeping a fine stable, taking frequent trips to the Twin Cities and to the Fair at Chicago, and going on annual hunting trips in Dakota. In December, 1898, he took a month off to do postgraduate work in Chicago, leaving his friend Dr. C. W. Malchow of Shakopee to attend his patients in both Chaska and Carver. After his return, Dr. Hartley practiced in Carver until his death in 1928.

Dr. Hoeffken practiced at Schnappsburg in 1893.

George B. Holmes practiced in Carver in 1870.

S. M. Janes, a homeopathic physician and a graduate of the Hahnemann Medical College of San Francisco in 1888, was licensed in Minnesota in 1892. He settled in Jordan about 1893. He was intensely interested in both politics and medicine. In 1895 he spent a fortnight visiting Twin City hospitals and a month in New York City looking up the latest in medicine and surgery. To quote from the *Scott County Argus,* an issue of 1895: "The doctor is not one of those whose contentment has robbed him of his ambition and his recent expensive trip shows that he is bound to have the best in his profession and keep abreast of the times." In 1898 he was appointed one of the county physicians and served in that capacity for several years. About 1900 he established a private hospital in Jordan.

David A. Kirk was graduated from the Detroit Medical College in 1888 and was licensed in Minnesota in 1889. He practiced in Jordan, Scott County, about 1890 or 1891. Later he was in Le Sueur (see the medical history of Le Sueur County).

John Knotz, a graduate of Hamline University in 1897, came to Cologne from Minneapolis in April, 1898. He spoke both English and German and was an old practitioner. Cologne had never had a physician previous to that time, and the village was anxious to keep him. His practice extended to Benton and Anoka, and he was well patronized. He could not make up his mind

to stay, and moved to Story City, Iowa, for a few months but returned again to Cologne where he remained for several years.

J. C. Koch located in Norwood about 1894, having previously practiced in Waconia. After residing for five years in Norwood, he died at a Minneapolis hospital from complications following the removal of his appendix.

C. H. Kohler, son of S. B. Kohler of Watertown, Carver County, and brother of Dr. F. G. Kohler of Forest Lake, practiced in Shakopee about 1890, then moved to Glencoe and later to Minneapolis.

David La Framboise was an Indian doctor, one of the local Sioux, who lived at Shakopee during the nineties and was also well known at Hastings.

John Landenberger, Jr., established himself in New Prague about 1871. He was well supported by the local Democrats in politics, and for several years he served as coroner of Le Sueur County. New Prague is situated on the county line, and consequently Dr. Landenberger's practice extended into both counties. In 1886 he associated himself with Dr. John Habenicht and the two physicians opened a hospital for the treatment of chronic diseases; as noted earlier, the project was of short duration. Dr. Landenberger, who practiced under the Exemption Law of 1883, remained in New Prague for many years.

John Landenberger, Sr., settled in Helena, Scott County, in 1854 and lived there until 1875, when he moved to Portland, Oregon. He practiced in Portland for two years and was buried there when he died in 1877 at the age of fifty-nine.

Benedict Lehmann came to Watertown, Carver County, in 1856. In the fall of that year he laid out the village of Helvetia on the Crow River. How long he remained in Carver County is not known.

Dr. Lening, a graduate of a German University, settled in Blakely Township, Scott County. He died there in 1858.

E. H. Lewis came from Washington, D. C., and settled in Carver in August, 1870. Many physicians had come for a brief stay at Carver, then passed on in search of a better field. Dr. Lewis came better recommended than most (he had had eight years of experience), and Carver was then in need of a physician who could handle the sudden onslaught of epidemics that came in that year. Soon after his arrival Dr. Lewis was busy day and night. He was, without doubt, the most popular man in town, and his social position as well as his professional standing was soon assured. His practice extended throughout the county and into Scott, Sibley, and McLeod Counties. On several occasions he was elected to public offices: in 1870, as deputy county physician and in 1871 as examining surgeon for Carver County. In the latter year he served also as Commander of Baxter Post No. 25 of the Grand Army of the Republic, and as president of the newly organized Carver Literary Society. In 1872 he opened an office in Chaska and commuted every day. In the following spring he took his younger brother, Dr. Frank E. Lewis, into partnership in the Chaska office, where the latter remained for a short time.

Dr. E. H. Lewis died at Carver in July, 1884. At the time of his death, he was a leading member of the profession in the Minnesota Valley.

Frank E. Lewis, as noted above, was a brother of Dr. E. H. Lewis of Carver. He was a graduate of Rush Medical College, and practiced in Carver and Waconia during the first half of the year 1872. The following spring, he practiced at Chaska in partnership with his brother. In June, 1873, he moved to Alexandria, Douglas County, where he formed a partnership with Dr. Godfrey Vivian of that town.

Charles Lord was born in Westmorland, New Hampshire, on July 22, 1817. At the age of seventeen years he went to Augusta, Georgia, where he spent three years in the study of medicine. He married in 1839, and five years later entered the office of Dr. Woodhouse in New Hampshire, with whom he stayed three years as a student. In 1847 Dr. Lord began the practice of medicine in his native town, and continued there until 1849, when through the influence of relatives of his wife he moved to Pittsburgh and there entered into practice with Dr. Oldshoe. When his health failed him, he sought the climate of Minnesota and arrived in Carver County in the spring of 1854. He settled in the township of Chanhassen. In the fall of the same year he moved to a farm in Eagle Creek Township, two miles east of Shakopee. His claim covered 160 acres, half of which he sold, and the remaining part of which he farmed until 1864. Then, having regained his health, he settled in Shakopee and actively engaged in the practice of his profession.

Dr. Lord had a large clientele throughout Scott County. For a time, about 1867, he had his office at Jordan, but in a few months returned to Shakopee. He held many public offices, and was one of the first county commissioners. For years he was an active member of the town board of Eagle Creek and also a member of the school board for that district. After moving to Shakopee, Dr. Lord became a member of the board of management of School District No. 2, which position he held at the time of his death. He was chosen to represent the Third Ward of the city as alderman at the first election under the Shakopee city organization (1870). He held that position for six years, at the end of which he declined re-election because the work entailed frequent absence in the discharge of professional duties. He was a prominent member of the Masonic Lodge, and was active in the Episcopal Church. He continued to practice medicine until his death, from Bright's disease, in May, 1881.

Dr. Lord was spoken of, by a contemporary, as a "conscientious and painstaking physician."

John A. Macdonald, born in Scotland in 1809, came to the Minnesota River valley, settling in the vicinity of Chaska about 1859, and was at that time known as a physician. He is recorded in the *Official Register of Physicians in Minnesota, 1883-90* as having graduated in 1867 from the College of Physicians and Surgeons at Keokuk, Iowa. In 1864 there was a severe epidemic of smallpox in the county, and Dr. Macdonald did a great deal to alleviate distress among those afflicted. In April he wrote an article for the *Chaska Valley Herald* in which he called the people's attention to sanitary and preventive measures. In October, 1865, he left Chaska to serve as First Assistant Surgeon of the Second Min-

nesota Cavalry. Upon being relieved from duty, he returned to practice in Chaska; his card published in January, 1866, read as follows:

> Dr. John A. Macdonald
> Physician and Surgeon
> Late 1st Asst. Surg. 2nd Minn. Volts. Cav'y.
> Respectfully intimates to the inhabitants of Carver County that he has again opened an office in Chaska. Where he will attend as before to every kind of business connected with his profession. Surgical operations scientifically performed. Chronic diseases successfully treated and all other calls promptly attended to.

In October, 1866, he moved to Saint Paul, leaving Chaska and the nearby country much in need of a physician, as he had been the only one there. It is possible that he then took a course in medicine at Keokuk, Iowa. Later he returned to Chaska, but left to serve in the army again, as contract surgeon, in 1884. In March, 1886, he located at San Diego, California, but again returned to Chaska. Two years later he moved to Chicago, giving up his practice on account of poor health, but again he returned, and remained in Chaska up to a month prior to his death, which occurred at a Minneapolis hospital on November 30, 1890. He was the father of the Honorable John L. Macdonald, who lived in Shakopee for several years.

William F. McCarthy, a graduate of the Saint Paul Medical College in 1880 and the University of Minnesota in 1889, came to New Prague from Minneapolis in the year 1890. After two or more years of practice there, he moved to Jordan, where he remained for many years. During the years 1894 through 1896 he served as county physician. He was active in relieving those afflicted during the severe epidemic of diphtheria in the period of 1896-1898, serving part of that time in his capacity as county physician. He served as health officer of Sand Creek during the year 1897 in the worst part of the epidemic. He also held the position of pension examining surgeon in 1894.

C. W. Malchow settled in Shakopee as a successor to Dr. A. A. Sabin after the latter's death. He came from Lester Prairie, Minnesota. At the time of his arrival (March, 1896) he was less than thirty years of age and unmarried. Almost immediately he became a part of the social life of the town. He made frequent visits to Minneapolis, as his parents and sisters lived there. Also he was an active member of the Alumni Association of the Medical Department of Hamline University, and served as president of the association for several years. In June, 1897, he gave up his practice in Shakopee for a year of clinical work in the hospitals at London, Paris, Berlin, Munich, Vienna, and New York. He went first to Guy's Hospital in London, then studied for a time under Koch, in Berlin. He returned to Shakopee in March, 1898, and was considered the leading physician there at the time. In that year and the next he held several civic offices, among them that of city health officer. Apropos of his professional ability, it is of interest to note that he received, in 1894, a gold medal awarded for the highest examination during 1893-1894 by the Minneapolis College of Physicians and Surgeons.

In May, 1900, Dr. Malchow sold his medical practice, office equipment, horses and vehicles and went to Europe again for a year's recreation and

study, intending to perfect his knowledge in a special line, that of diseases of the digestive organs. When he returned in December of that year, he established himself in Minneapolis and became professor of anatomy at the Minneapolis College of Physicians and Surgeons. A more dramatic chapter of his life came after 1900, when he wrote and published a book, *The Sexual Life,* too progressive for the first decade of the twentieth century, and was sentenced to the penitentiary.

J. Manning, a graduate of the Iowa College of Physicians and Surgeons, established himself in Cedar Lake, Scott County, in March, 1877, as a schoolteacher. In the fall of 1877 there was a controversy between him and the county superintendent, and Manning was deprived of his certificate. In 1878 he practiced medicine at Hamilton, and in September of that year he ran for the office of superintendent of schools in Scott County, but lost. During 1879 and 1880 he continued the practice of medicine at Cedar Lake.

M. H. Manson came to Shakopee, Scott County, in October, 1875, succeeding Dr. L. S. Thompson. He was a native of Maine and made frequent visits there. In 1880 he held the position of United States pension surgeon for Scott County. Both Dr. and Mrs. Manson were well liked and active in the social circles of Shakopee. Dr. Manson became a member of the Shakopee post of the Grand Army of the Republic when it was organized in 1886, and he served as post surgeon that year. In 1887 he moved to Minneapolis.

N. H. Marshall, a graduate in medicine from the University of Minnesota in 1892, settled in Chaska, Scott County, about 1895. He was a prominent member of the profession and held several offices during the first years of his residence. In September, 1897, he received an appointment as pension examining surgeon at Shakopee and served as president of the board that year. In 1898 he served on the board of trustees of the Chaska Red Cross Aid Society, and in 1899 as physician of the Modern Woodmen of America, a fraternal organization then composed of many of the leading citizens. In October, 1898, when he expressed his intention of leaving Chaska for Park Rapids, he was induced to remain by the earnest requests of his many patients in the city and vicinity. In December of that year he was elected chairman of the board of health of Chaska. He remained in practice there until his death in 1930.

M. M. Mead came to Chaska to practice in September, 1871. He had formerly resided at Winona. After some years of practice he died in the Soldiers' home at Minnehaha.

Dr. Meek arrived in Young America, Carver County, about 1886. He gained an extensive practice in the town and nearby country. In 1887 he was made surgeon of the Major J. C. Becht Post, Grand Army of the Republic. In that year he moved to Glencoe.

R. S. Miles settled in Young America, Carver County, in December, 1872. He was a member of the Physio-Medical School. He met with a fair degree of success in the county and stayed there several years.

(To be continued in the July issue.)

President's Letter

NATIONAL HEALTH ASSEMBLY, 1948

The National Health Assembly held in Washington last month marked the second time in ten years that such a conference has been called. In retrospect, both conferences appear quite different. A dangerous undercurrent—the constant push for nationalized medicine—was present in both; but this second conference leaves the cry for compulsory health insurance somewhat muted. In its fight to preserve private practice, medicine has apparently dealt some telling blows, but it should be obvious to every thinking medical man that the constantly expanding efforts of the profession to provide more adequate and more equitable medical service to the general public will have to be promoted relentlessly and ever more unselfishly if the arguments of pro-nationalists are to be routed.

The first edition of the health assembly in 1938 was definitely a packed conference with physicians considerably outnumbered by social planners and others committed to support of federally administered health programs. Pressure from the American Medical Association on Federal Security Administrator Ewing, who called the 1948 assembly, resulted in a much fairer proportion of physicians among the groups represented. Out of 800 delegates to the recent conference, about 200 were doctors. Also represented were state health departments, social workers, labor, agriculture and various other organized groups.

National meetings of this kind lend themselves well to behind-the-scenes activities of federal bureaucrats. Organized medicine must, therefore, keep in closest touch with these developments. The Minnesota State Medical Association, just as many other state associations, sent representatives both to observe and to participate in this conference.

Called at the request of President Truman for the purpose of developing "feasible health goals for the next ten years," the National Health Assembly examined several national health problems. There were fourteen sections, each discussing a particular question. Worthy of note is the work of the section which discussed the nation's need for medical care. It was in this section that the largest number of delegates registered. It is interesting that in spite of so many diverse opinions held by those in this section, many areas of disagreement were apparently cleared.

The findings of each of the sections will be published in full at a later date from Mr. Ewing's office, but from the preliminary reports it is apparent that all sections took their work very seriously, and all approached their problems from the community level rather than from the national level. Of course, the fact that the full report of what took place at the Health Assembly is to be made by Mr. Ewing leaves the field wide open for him to present whatever viewpoint he desires. Delegates apparently, however, did recognize the fact that health problems cannot be solved by physicians and health authorities alone; only in a couple of instances was emphasis given to the need for federal assistance. Surprisingly, even in the medical care section voluntary health insurance took precedence over compulsory plans; and all groups represented in this section endorsed extension of voluntary prepayment programs.

Quincy Howe of the Columbia Network broadcast a summary of the conference in which he praised doctors who had attended for taking time to work with the National Health Assembly. He said that the fact they had shown themselves so co-operative, so understanding and so open-minded, seemed to him the most promising and important development of the whole meeting.

We of the medical profession must bear in mind that the people at this conference are the people with whom we must work in accomplishing health objectives. We have pledged ourselves to co-operate with responsible groups toward the realization of improved health for Americans and to support any *feasible* programs toward that end. We reaffirm that pledge now. Ours is the responsibility of offering constructive leadership in the health field where our experience and training have qualified us to speak.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

B.A.L. IN HEAVY METAL POISONING

ONE of the important discoveries from the medical standpoint made during World War II was that of B.A.L. (British Anti Lewisite) by English scientists. In 1909 Erhlich first stated that the toxic action of arsenic was due to its combination with sulfhydrl groups (SH) of the tissues. Many other investigators have ascribed that metallic compounds combine with these thial groups of the tissue and thus inactivate these constituents necessary for life and function. English scientists—Peters, Stocken and Thompson—working on this theory proposed by others discovered 2-3 dimercaptopropanol (B.A.L.) as an antidote for lewisite poisoning. They used B.A.L. in an inunction and showed that it protected the skin against arsenical vesicants, stopped systemic effects and increased urinary output of arsenic.

These scientists showed that B.A.L. (CH_2-SH-HC-SH-H_2-COH) produced its effect by using its sulfhydrl groups (SH) to compete with the tissue sulfhydrl groups for the poison. It not only prevented the toxic reaction but could reverse the reaction, the latter being of extreme importance in cases of poisoning. They further revealed that B.A.L. was a dithial containing two (SH) groups and as such had greater stability and greater affinity than monothial groups.

There are three of these mercaptans: (1) B.A.L., (2) B.A.L. glucoside and (3) thiosorbital. B.A.L. glucoside is not sufficiently available in its pure form. Thiosorbital has an advantage in that it is water soluble and can be given intravenously. B.A.L. itself is commonly used and is most effective in treatment.

B.A.L. is of great value in the treatment of bichloride of mercury poisoning. Longcope reports twenty-three patients taking doses ranging from .5 to 20 gms. of this substance with only one death. He reported the mortality rate at Johns Hopkins prior to advent of this drug as being 12.9 per cent and at present only 4.4 per cent. Eagle reports excellent results using B.A.L. in treating the complications of arsenic therapy. These complications included toxic encephalitis, agranulocytosis, aplastic anemia, jaundice, massive overdosing with oxophenarsine and arsenical fever. The most conclusive evidence of its efficiency was in toxic encephalitis and agranulocytosis. There is one very encouraging report of a case of optic neuritis due to tryparsamide successfully treated with B.A.L. and one case of lead poisoning has been reported in which treatment was successful. Three cases of tellurium poisoning were recently treated with complete recovery. Experimentally, B.A.L. is useful in treating poisoning in animals produced by antimony, bismuth, chromium and nickel, but has been reported as not being useful in the treatment of poisoning in animals by lead, thallium and selenium. Because of its ability to reduce methemaglobin to hemoglobin it should prove useful in treatment of poisoning due to anilin compounds such as acetanilid and phenacetin.

The recommended dosage of B.A.L. is from 2.5 mg. to 5 mg. per kilo of bodyweight given at four hour intervals. B.A.L. is prepared as a 10 per cent solution in peanut oil for intramuscular use. In bichloride of mercury poisoning 5 mg. per kilo is recommended for the initial dose followed by 2.5 mg. per kilo at two to four hour intervals for the next twelve hours; thereafter 2.5 mg. per kilo may be given b.i.d. until recovery occurs. The reactions from B.A.L. therapy included nausea, vomiting, headache, burning sensation in eyes and feeling of constriction in the chest. No serious reactions from B.A.L. have been reported. Adrenalin may be used in the treatment of any of the reactions.

Thomas J. Kenyon, M.D.

INDUSTRY AND THE OLDER AGE GROUP

WHATEVER the reasons may be, a man or woman who has reached the age of forty-five may well have the feeling that he or she is discriminated against when it comes to obtaining a job. Our laws relating to responsibilities of employers towards employes doubtless constitute one

reason for this discrimination. Probably more important is the feeling on the part of the employer, which is more a tradition rather than founded on fact, that youthful employes are more desirable than those in the group over forty-five.

A series of articles on the problems presented by our aging population, written by Dr. Howard A. Rusk, have been appearing in the *New York Times* and are most constructive in nature. He calls attention to the fact that although certain jobs requiring agility and strength are admittedly better filled by the youthful, there are certain positions requiring judgment, experience, and skill which are better filled by the older group. Experience and age, up to a certain point, are an advantage to judges, teachers, artists, architects, doctors, and others. With an ever-increasing larger percentage of the population constituting the older age group, the importance of society's furnishing adequate employment for this group becomes apparent. Dr. Rusk mentions some of the steps which have been taken to meet this situation. In New York, the Federation Employment Service, an affiliate of the Federation of Jewish Philanthropies, has recently made a campaign to secure employment for those over forty-five and to educate the public to the idea of the fitness of older people for employment. The response of employers all over the country is said to have been remarkable, and they have agreed to place orders for older workers. With the slogan "Experience, Loyalty and Skill Come with Age," attention is drawn to the fact that older workers make good employes. With family responsibilities, they are more stable in their jobs and actually, according to U. S. Bureau of Labor statistics, have fewer accidents.

Dr. Rusk mentions the Forty Plus Club in New York City, composed of men over the age of forty who have had extensive executive experience, which has been successful in obtaining jobs for over 70 per cent of its 3,000 members.

These organizations are constructive in nature in meeting the evident need, not only of putting to work more of those chronologically in the older age group, but still physiologically young and able to be productive for the good of themselves as well as their communities. The tragedy of old age is when one's mental and physical disabilities force him to become entirely dependent on society. Many in the older age group need not be dependent on others. This is a fact which needs emphasis.

RADIO "BUNK"

WHEN a physician hears over the radio, as he so frequently does, that the majority of his profession recommend a certain brand of cigarette, or that dentists prefer a certain dental powder to a cream, or that nurses who have to be dainty use a certain kind of soap, he is inclined to react with the word "bunk," whether expressed or not.

While many physicians smoke, they doubtless use as great a variety of brands of cigarettes as the general population. While sampling of the profession in regard to cigarette preference may have been carried out, we challenge the correctness of the conclusion that a majority prefer any one brand. The same applies to any majority preference on the part of the dental or nursing profession. We are not informed on the brand of cosmetics used by Hollywood stars, but we have the feeling that most of them use too much of everything which does not improve on nature. We have heard that most of them have capped incisors and deem this necessary as screen magnification tends to show up dental imperfections.

How long is the opinion of the profession going to be falsely broadcast on the air? Such falsification which must be obvious to the radio audience only detracts from the confidence which the radio industry must desire for its broadcasting.

SOCIALISM VERSUS COMMUNISM?

"There could hardly be a more perverse and mistaken idea than the idea that you can fight communism with socialism. So-called 'gradual' socialism is at best a halfway step toward communism. The economic ideals of socialism and communism are identical. Both believe in government ownership and operation of the means of production. Once this ownership and operation become sufficiently extensive, the government has economic life-and-death powers over the individual. It can say where he must take his job, what job he must take, or whether he can take a job at all. And once the government has this power, the liberty of the individual has in fact, if not in form, disappeared. As Alexander Hamilton pointed out in the Federalist Papers a century and a half ago, 'A power over a man's subsistence amounts to a power over his will.'"—HENRY HAZLITT.

A NEW CANCER EDUCATIONAL SERVICE

A. H. WELLS, M.D., Chairman
Cancer Committee, MSMA

A new and valuable service in the fight against cancer will soon be available to the physicians of the state.

The House of Delegates and Council of the State Medical Association has approved a new cancer educational service, which will offer help without expense to local physicians, hospital staffs, or county medical societies.

Three functions provided by the service will aid doctors in controlling cancer, which takes an annual toll of 180,000 lives in the United States. Recognized as a major health problem, cancer has become second only to heart disease as a cause of death, and ranks first for women between the ages of thirty-five and fifty-four. Fortunately, an enlightened public is now seeking earlier treatment, the physicians are well prepared with knowledge and facilities, and science, through research, continues to offer hope of an ideal preventive or cure.

Educational Services

The Purpose.—To establish a cancer educational service which would be readily available to the Minnesota county medical societies, hospital staffs, and individual physicians.

Collaborating Physicians.—Will be a group of recognized specialists who are qualified to give authoritative opinion on some phase of cancer diagnosis or treatment. The collaborating physicians will be men with the above qualifications selected by the Cancer Committee of the State Medical Association who will volunteer to take part in the educational service program. This group may be added to at any time to include physicians for special problems.

Plans.—The Cancer Educational Service will offer three types of service without expense to local physician, hospital staff, or county society.

(a) A team of from three to five members of the Cancer Educational Service will be offered to any component society of the Minnesota State Medical Association for a one-day cancer institute.

(b) One or possibly two members of the cancer educational service will be available to meet with any hospital staff in the state, no matter how small, for an afternoon or evening of cancer discussion.

(c) A free cancer correspondence service through which any physician may write confidentially to the Cancer Educational Service regarding any problem concerning a cancer case. Such inquiries will be referred to the member of the Cancer Educational Service who seems best qualified to answer this particular inquiry. The names of the physicians making the inquiry will not be divulged. The opinion obtained by the Cancer Educational Service will be forwarded on to the physician making the inquiry. Inquiries which seem to be of special interest and the opinion obtained will be published in Minnesota Medicine from time to time, without the names of the physicians being used.

Headquarters.—The headquarters of the Minnesota State Medical Association shall be the office of the Cancer Educational Service of the Cancer Committee.

Operation.—The Cancer Educational Service will be carried on under the direction of the Cancer Committee of the State Medical Association. All communications relative to this service shall be mailed out on special stationery of the Minnesota State Medical Association Cancer Committee carrying the address of the State Medical Association Headquarters in Saint Paul. The Cancer Control Division of the Minnesota Department of Health will finance a secretarial service to aid in the operation of the educational service. This secretarial service will take care of scheduling the collaborating physicians for county medical society and hospital staff meetings. Also this service will submit correspondence inquiries to the selected collaborating physician and transmit the reply to the inquiring physician. The Cancer Control Division of the Minnesota Department of Health will aid the Cancer Committee in every way in promoting and carrying out these institutes and staff meeting conferences.

Financing.—This service will be principally financed through funds of the Cancer Control Division of the Minnesota Department of Health, but other organizations, such as the Minnesota Division of the American Cancer Society may also contribute to this service. Collaborating physicians will be paid an agreed stipend for the services rendered. This stipend tentatively has been set at $50 and expenses for each meeting in which the collaborating physician participates.

County Medical Societies.—The facilities of the Cancer Educational Service will be available in the territory of any component county medical society as soon as official approval by the county society or its authorized officers has been given for the cancer committee educational service in the territory.

POVERTY AND DISEASE

It is well known that the incidence and severity of illness are greater among the urban poor than among the more prosperous groups. Ignorance is a factor in promoting high sickness rates, but ignorance is in part a result of poverty.—*Medicine in the Changing Order, Rep. New York Acad. Med. Comm., The Commonwealth Fund, 1947.*

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CONGRESS CONSIDERING DRAFT OF PHYSICIANS

Planning for the possibility of another national emergency is naturally of vital concern to members of the medical profession, in view of the general confusion which reigned during the last war with regard to the utilization of medical personnel and facilities. These plans have, however, taken an unexpected turn with the appearance in Congress of a bill (H.R. 6401) which asks among other things that the President be authorized to draft certain members of the medical profession under the age of forty-five.

The House is now considering this bill. According to latest reports, the army, the air force, the navy and the marine corps under this bill can call in doctors so as to maintain a ratio of five doctors to every 1,000 men on active duty.

Here, in order of priority, are the qualifications making a physician under forty-five years of age eligible for call:

(1) If he accepted government aid in securing education or was deferred for that purpose and had no active duty as a commissioned officer.

(2) If he participated in the specialized training programs and served for less than twenty-four months.

(3) If he is under thirty-five and served less than ninety days on active duty.

(4) If he is over thirty-five and served less than ninety days on active duty.

(5) If his total active service is less than twenty-four months.

(6) If he comes under some other classification to be prescribed by the President.

AMA Protests Physician Induction

The AMA Council on National Emergency Medical Service which has been studying ways and means of bringing order out of chaos among medical ranks in time of emergency has protested to officials in Washington that provisions for inducting physicians included in H.R. 6401 are "unnecessary and discriminatory and constitute a reflection on the patriotism" of the medical profession.

Physicians throughout the country, both those called upon to serve in the armed forces and those left to provide medical care for the civilian population, met every demand for medical personnel without compulsion by law. There is certainly no reason to believe that physicians will not again respond in the same manner if the need should arise. Yet there is strong evidence in the present proposal that the federal government officials are not willing to accept this record of physicians as proof of their good faith.

On April 5 and 6 the Council on National Emergency Medical Service of the AMA held a meeting in Chicago to discuss plans for national defense against atomic, biologic and psychologic warfare. The Minnesota State Medical Association was represented by the Chairman of our Committee on Military Affairs. The work being done by this AMA Council typifies the willingness of American physicians to take the lead in strengthening our national defenses.

Medical Inventory Predicted

It has been predicted that in planning for national civil defense a number of physicians will be needed to serve full time with the Department of Civil Defense, assisted by a panel of medical advisers. The possibility is also strong that the army will call upon the AMA Council for a survey of medical personnel; a check on needs of civil and military organizations; and the establishment of physical standards for military service. The AMA will in turn ask state and county medical societies to co-operate.

A reactivation of the machinery for defense and war is now well under way nationally.

Selective Service would like to have a physician appointed to each of its local boards. Physicians will serve as examiners as they did for World War II, according to present plans. From this it can be seen that physicians will be asked for the same type of service in the event of another war as formerly, with the exception that should present legislation be passed physicians will also be drafted.

It is the opinion of the American Medical Association and its Council on National Emergency Medical Service that this would not give proper recognition to civilian needs. As in the last war, civilian doctors will find themselves shorthanded; the very problem which the Council is seeking to avoid will be re-created. There is, in addition, every indication that even more physicians will be needed on the home front in a future war because of the danger of atomic attack and the increasing possibilities for civilian involvement.

Ask National Civilian Medical Board

The Council on Emergency Medical Service is asking that there be established immediately a national civilian medical board, paralleling the functions of the National Security Resources Board, which would have charge of policies and programs for medical, health and sanitary services for the civilian population, for industry, for agriculture and for the armed forces during an emergency or period of national mobilization. This board is absolutely essential to prevent avoidable depleting of the supply of doctors to take care of the people at home.

The medical profession will undoubtedly have a prominent role in activating whatever plans for national defense are finally evolved. In addition to these responsibilities, every physician should be on the alert regarding his probable military status. The Senate military committee is considering a proposal to examine and classify physicians both physically and professionally and to assign every doctor to military or civilian duties. The idea is to have those physicians in the military service remain in private practice until their services are needed elsewhere. It seems very likely that definite steps will be taken by Congress in the near future to enact definite defense measures along the lines outlined here. It is assured that the Association will be kept informed on these developments.

MEDICINE AWAITS RESULTS OF NATIONAL HEALTH ASSEMBLY

To all outward appearances the recent National Health Assembly in Washington was a fair and hard-working conference, with a profusion of congratulatory messages exchanged among the participants at the conclusion of the sessions.

The question being asked by the medical profession today is—"What happens now?" That question will be answered only when the official published report of the deliberations and conclusions of the fourteen section meetings which were held is finally handed out from the office of Mr. Oscar R. Ewing, Federal Security Administrator, who called the Assembly at the request of President Truman.

From the preliminary reports and conclusions already briefly publicized, a number of highly encouraging developments have been noted, although it is too early to predict what the end result will be. Apparently, a real attempt was made to meet issues squarely and to be mutually tolerant. And although the followers of compulsory health insurance weren't by any means "converted" they did on several occasions admit that the principle of the voluntary prepayment plan is highly desirable and that these plans should be encouraged and extended. Physicians will want to keep in touch with the developments following this meeting.

Another Assembly Planned

The Executive Committee of the Assembly is planning to have another meeting to decide on future plans along these lines. They will discuss the advisability of holding such Assemblies periodically, perhaps every five years.

This Executive Committee represents part of the steering machinery of the Assembly. Members were appointed a month in advance by Mr. Ewing. The medical profession was outnumbered on the original panel, but additional medical representatives as well as members of other professions were placed on the committee when the discriminatory nature of the initial plans for the Assembly was pointed out by the AMA in an editorial in the *Journal.*

MSMA Represented at Conference

The Minnesota State Medical Association, at the direction of the Council, sent three representatives to the meeting; the Chairman of the

Committee on Public Policy attended as an official delegate, while the Chairman of the Council and the Executive Secretary served in the role of observer only.

Each of the 800 delegates, of whom 200 were doctors, was enrolled in one of the fourteen sections which were assigned to the discussion of a particular problem. Section subjects were: (1) Health and Medical Personnel, (2) Hospital Facilities, Health Centers and Diagnostic Clinics, (3) Local Health Units, (4) Chronic Disease and the Aging Process, (5) Maternal and Child Health, (6) Rural Health, (7) Research in the Service of Health, (8) Medical Care, (9) State and Community Planning for Health, (10) Physical Medicine and Rehabilitation, (11) Dental Health, (12) Mental Health, (13) Nutrition, and (14) Environmental Sanitation.

Most difficult assignment of the whole conference was the one handed to the section discussing ways and means of providing medical care. It was ably carried out by Dr. Hugh R. Leavell, professor of public health practice at Harvard, who acted as chairman and succeeded in bringing into agreement on a number of points a group of persons with the most widely divergent viewpoints possible. Members of the committee under Dr. Leavell were Dr. Ernst P. Boas, Physicians' Forum; Nelson Cruikshank, director, social insurance activities, AFL; Horace Hansen, general counsel, National Federation of Health Co-operatives; Dr. Thomas A. McGoldrick and Dr. James R. McVay, AMA; Harry Read, CIO; Dr. C. Rufus Rorem, Philadelphia Hospital Council; and Dr. Louis Wright, Harlem Hospital.

After heated discussions agreement was reached on seven points discussed. However, an eighth point was taken up, but according to the summary statement released at the close of the sessions, it was left unsettled. It will come as no surprise to physicians that Point Number 8 was the issue of compulsory national health insurance.

MENTAL HOSPITAL FIGURES RELEASED

An interesting report to come from the Mental Hygiene Division of the United States Public Health Service is one just released giving the national picture on conditions in mental hospitals. The report shows Minnesota standing about in the middle—neither much better nor much worse that the national average for such things as expenditures per patient; percentage of overcrowding, et cetera.

Figures summarizing the national picture from 1937 to 1946 reveal a gradual increase in the number of patients confined in mental hospitals; and although there has been some expansion, increases in facilities and personnel have lagged behind the increases in the number of patients. Percentages of overcrowding have increased several points; and whereas there were 5.8 patients for each employe in 1937, employes now are responsible for at least one more patient apiece.

Overcrowding in Minnesota institutions is about half as bad as the national figure—nationally there are 16.3 per cent more patients than facilities warrant, whereas in Minnesota there are 8 per cent more. The United States spends more per patient on the average than Minnesota does—$436.72 per patient nationally; $328.66 for Minnesota patients. National average for number of patients assigned to each employe is 6.2—in Minnesota it's 7.5.

Twenty-eight states are more overcrowded than Minnesota—twenty, including the District of Columbia, are less overcrowded. Seventeen have more patients per employe than Minnesota, while twenty-nine states, including the District, have fewer patients per employe, while two states are the same as Minnesota in this regard. Thirty-one states, including D. C., spend more per patient—seventeen spend less.

MEDICAL COSTS ANALYZED

A new study on "Comparative Increases In the Costs of Medical Care and the Costs of Living" is now off the press. Authored by Frank G. Dickinson, Ph.D., director of the American Medical Association's Bureau of Medical Economic Research, this study reports that living costs have skyrocketed at a much faster rate than physicians' fees.

The quantity of medical care received by Americans, according to Dr. Dickinson's findings, was two-thirds greater in 1946 than in 1939. He also found that the amount of care has increased faster than the number of physicians. The apparent increase in "output" of physicians is laid to the increasing use of technical assistants.

"Whether one examines the record of total expenditures of the American people for medical

care or the prices of significant items during recent years, he comes to the general conclusion that the American people have been fortunate in that the costs of keeping well have not risen as rapidly as the costs of living," Dr. Dickinson concludes.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

Julian F. DuBois, M.D., Secretary
230 Lowry Medical Arts Building
Saint Paul, Minnesota

Texas Eye Swindler Sentenced to Five-year Term in Minnesota Prison

Re State of Minnesota vs. Elliott Wilkinson.

On May 14, 1948, Elliott Wilkinson, 54 years of age, Dallas, Texas, was sentenced to a term of not to exceed 5 years at hard labor in the Minnesota Prison at Stillwater, Minnesota, by the Hon. Karl Finkelnburg, Judge of the District Court at Winona, Minnesota. Wilkinson was sentenced following his plea of guilty, on the same date, to an information charging him with the crime of grand larceny in the second degree. That charge grew out of Wilkinson's arrest on May 9, 1948, by Winona, Minnesota, police officers after Wilkinson had swindled a Winona County farm woman out of $60 by falsely representing himself as an eye specialist from Chicago, Illinois, and further stating that the patient was afflicted with cataracts and that they must be immediately removed.

Wilkinson is an old-time eye swindler, who, with an accomplice, forfeited $8,000 in cash bail at New Ulm, Minnesota, in September, 1924, after both had been arrested for swindling a Brown County farmer out of $1,500. In the Brown County case, Wilkinson was not apprehended until 1932, at which time he was returned to New Ulm from Houston, Texas. On April 8, 1932, Wilkinson was sentenced by the Hon. A. B. Gislason, Judge of the District Court at New Ulm, to a term of not to exceed 5 years in the State Prison at Stillwater for grand larceny in the first degree, growing out of the $1,500 swindle perpetrated by Wilkinson and his accomplice in 1924. Wilkinson served at the Minnesota State Prison until November, 1933, at which time he was released and returned to Texas. In 1936, Wilkinson was arrested in Omaha, Nebraska, and removed to Norfolk, Virginia, where, on February 1, 1937, he pleaded guilty to using the mails to defraud. For that offense, Wilkinson admitted that he was sentenced to serve 7 years in the Federal Prison at Atlanta, Georgia. Wilkinson stated that he served in the Atlanta Prison until November 26, 1941, on which date he was transferred to the Virginia State Prison at Richmond, Virginia, to serve 5 years on the charge of swindling to which Wilkinson had pleaded guilty at Courtland, Virginia, just prior to his being sentenced in Federal Court at Norfolk, Virginia, in 1937. Wilkinson stated that he served in the Virginia State Prison until May, 1945. It is Wilkinson's claim that he was not arrested for any offense after being discharged from the Virginia State Prison, until he was arrested at Winona, Minnesota, on May 9, 1948. In explaining his method of operating, Wilkinson stated that he would seek out farm people, representing himself as an eye specialist, diagnose the case as cataracts and then proceed to extract a large sum of money from the patient. Upon receiving the money, Wilkinson stated that he would insert a liquid preparation in the eye and then show the patient a small piece of tissue paper, which Wilkinson represented as being the removed cataract. Just prior to his arrest at Winona, Wilkinson had attempted to swindle a Wisconsin farmer out of $1,400 in a similar fake eye operation. However, the farmer discussed the matter with his banker and was persuaded not to withdraw the money from his bank account.

The Minnesota State Board of Medical Examiners wishes to acknowledge the very fine co-operation received in this case from Sheriff George L. Fort of Winona County, County Attorney W. Kenneth Nissen, and the officers of the Winona Police Department. Wilkinson's prompt arrest at Winona was due, in large part, to the fact that the patient who had been swindled of the $60.00 reported the matter to the authorities, giving them an excellent description of Wilkinson which was published in the Winona *Republican-Herald.*

COR BILOCULARE

(Continued from Page 662)

cultures of the cardiac vegetations were not possible. Tiny Gram-positive cocci were found in pairs in the smears.

Summary

The case of a man, aged twenty-seven, dying as the result of congenital cardiac anomalies and their complications, including situs inversus subtotalis, cor biloculare, transposition of the aorta and pulmonary artery, pulmonary stenosis, absence of the ductus arteriosus, streptococci endocarditis on the atrioventricular valve leaflet, and evidences of chronic congestive heart failure, has been described.

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Minneapolis Surgical Society

Meeting of February 5, 1948

Dr. L. Haynes Fowler, Presiding

CARCINOMA OF THE ESOPHAGUS

Resection, High Esophagogastrostomy

THOMAS J. KINSELLA, M.D.

Minneapolis, Minnesota

Carcinoma of the esophagus constitutes about 2 per cent of all carcinoma but is not ordinarly given the thought and consideration which its frequency would seem to warrant. Clinically, this condition usually manifests itself first by dysphagia. The patient frequently first chokes on a rather large morsel of food. Then he becomes more careful about chewing and has no difficulty for a month or two after which the same sequence may again be repeated. This may occur several times before medical aid is sought. The history may reveal no episodes of choking but only a gradually increasing dysphagia, first for solid foods and then for softer things, and only late for liquid foods. An average time interval of about six months elapses between the onset of the first symptoms and the establishment of the true diagnosis. Most of this delay may be the fault of the patient, but not infrequently the physician does not appreciate the significance of dysphagia and must bear an equal if not greater responsibility. Dysphagia, however slight, must not be passed over lightly; it should call for a thorough study, including not only x-ray examination of the esophagus but also esophagoscopy if the former does not reveal a cause for the difficulty.

Esophageal carcinoma occurs most commonly in individuals between the ages of forty to sixty years (75 per cent), perhaps slightly earlier in women than in men. The condition occurs four or five times as commonly in men as in women. The lesion may occur in the upper, middle or lower third of the esophagus. Two years ago, before this society, I presented some cases of carcinoma of the lower portion of the esophagus surgically treated by resection and esophagogastrostomy. This evening I wish to discuss carcinoma of the middle third of the esophagus and to present a case which illustrates well the problems and difficulties encountered in successful treatment of a lesion in this region.

The esophagus in the mid-third, which extends from just below the bifurcation of the trachea to the apex of the pleura, lies in a very confined space, hemmed in by the trachea and its bifurcation, the arch of the aorta, the vertebral column and the right pleural reflection. Tumors arising in this region tend to spread to the regional lymphatic nodes about the bifurcation of the trachea or to the cervical lymph nodes, or by direct extension to invade the trachea, the aorta, or the pleural cavity on the right. Their successful treatment is not only difficult but quite hazardous and not too frequently undertaken.

Until a few years ago, dilatation, gastrostomy or anterior esophagostomy were the only means available for the relief of patients suffering from this type of lesion. Repeated dilatation over a string may keep the lumen of the esophagus open to a moderate degree and enable the patient to swallow liquids and soft foods until metastases or extension terminate the picture. Gastrostomy at best is a very unsatisfactory answer to this problem. The patient cannot swallow or enjoy his food and is tormented by a profuse secretion of mucus from the esophagus above the obstruction which plagues him day and night. If carried out late when the patient is in a debilitated condition, the operative procedure alone may carry a mortality of approximately 50 per cent. Resection of the local lesion with creation of a cervical esophagostomy, later to be connected to a gastrostomy opening by an external tube of rubber (the Torek operation), or by creation of a skin tube of the Gilles type, is at the best a very unsatisfactory procedure.

Primary resection of the offending lesion with mobilization of the stomach and primary anastomosis between the esophageal stump and the stomach high in the chest presents a much better answer to the problem, but is fraught with technical difficulties which increase as the apex of the pleura is approached. The patient whose case history I am presenting this evening illustrates these difficulties well, for his lesion lay very high and the reconstruction necessary involved making an anastomoses between the lower end of the cervical esophagus and the elevated stomach, a technical problem whose solution was considerably facilitated by the use of some special miniature de Martel clamps which we had made for this specific purpose.

Case Report

S. G., a man, aged fifty-seven, was admitted to St. Mary's Hospital, October 29, 1947. His general health had always been good until about seven years previously when he developed a carcinoma of the larynx which was successfully treated by total laryngectomy. An excellent result was obtained, leaving him with a permanent suprasternal tracheotomy. He had remained in good health subsequently and had reported to his original surgeon every six months for a re-check since that time.

About June, 1947, he began to have slight difficulty in swallowing, particularly for solid foods. As this did not improve he reported again to his original surgeon who found the cause of his difficulty to be an obstruction in the esophagus just above the arch of the aorta as demonstrated on the barium esophagram. Esophagoscopic examination did not visualize any tumor tissue which could be biopsied to establish a definite diagnosis. The possibility of primary carcinoma was

considered, but because of the previous carcinoma of the larynx and in the absence of a demonstrable ulcerative lesion it was considered logical that the obstruction was the result of possible metastatic carcinoma in the lymph nodes in the upper thorax. Surgical exploration was not recommended. Esophageal dilatation with sounds was carried out at once, repeated eight days later and again a month later. Subsequently, in September and October he was seen by Dr. Paul Boman of the Duluth Clinic, who also made an additional esophagram which revealed a localized obstruction slightly above the level of the arch of the aorta, of a character suggesting a primary esophageal lesion rather than extrinsic pressure obstruction. Dysphagia of moderate degree persisted in spite of the repeated dilatation, with progressive weight loss totaling 30 pounds. There was no pain nor cough, nor could any lymph nodes be palpated.

Physical examination revealed a well-developed, well-nourished sturdy individual, weighing 192 pounds in spite of his recent weight loss. His complexion was very florid. There were no palpable lymph nodes. There was a tracheotomy tube in the suprasternal region in a well-healed vertical scar from previous total laryngectomy. The blood pressure was 150 systolic and 100 diastolic in millimeters of mercury. The pulse was 88 per minute. The temperature was 99.2 degrees. The remainder of the physical examination was negative.

Laboratory examination revealed a hemoglobin of 102 per cent, red blood count of 5,490,000 cells per cubic millimeter and white blood cells 6,050 for each cubic millimeter. Differential count showed 70 per cent polymorphonuclear leukocytes and 30 per cent lymphocytes. The bleeding time was 4 minutes, coagulation time 4 minutes and 30 seconds. The blood was group 4.0, Rh negative. Total blood proteins were 7.0 grams, with 5.5 grams serum albumen and 1.85 grams of globulin. The urine was acid, the specific gravity was 1.014. There was no albumen nor sugar, and only a few epithelial cells were found in the sediment. An electrocardiogram revealed only a left axis deviation. Roentgen examination of the chest revealed the heart and aortic shadows to be normal in size, shape and position, with no broadening of the mediastinum. The lung fields were within normal limits. A lateral view of the thorax revealed no masses suggestive of mediastinal lymph node enlargement. Esophagoscopic examination was carried out October 20, 1947, by Dr. Kenneth Phelps. Only a conical narrowing of the esophagus was revealed in the involved area. It was lined with normal appearing mucosa and showed no tumor from which biopsy material could be obtained. There was no evidence of extrinsic displacement of the esophagus.

A tentative diagnosis of primary esophageal carcinoma was made and the condition and its possibilities and difficulties fully discussed with the patient and his medical relatives. Exploratory thoractomy in the hope of carrying out a resection was recommended.

Operation was carried out October 31, 1947, at St. Mary's Hospital, Minneapolis, under intravenous pentothal and curare (Baird's solution), with the intratracheal tube in place, through which 50 per cent oxygen and nitrous oxide was administered by Dr. Joseph Baird. A total of 3 grams of pentothal and 120 units of curare were used. With the patient in right three-quarters prone position, a wide, oblique, posterior incision was made with resection of a wide segment of the posterior sixth rib. The pleural cavity was opened and the thorax explored. Exploration of the hilar region of the lung revealed no enlarged or palpable lymph nodes present. The mediastinum was opened inferior to the arch of the aorta, and the exploring finger revealed no enlarged lymph nodes and no tumor mass until the finger was inserted well in front of the arch where the lower border of an apparently intrinsic tumor mass could be palpated with the tip of the finger. The mass was well above the upper border of the arch of the aorta and confirmed our impression that this was an intrinsic carcinoma and not an obstruction resulting from metastatic nodes. The upper mediastinum above the arch of the aorta and posterior to the left subclavian artery was opened, and again no metastatic nodes were palpated. The tumor seemed to be movable, but because of its very high position it was realized that difficulty would be encountered in reconstruction which must follow any removal. The possibilities and dangers of its removal were then discussed with medical relatives present at the operation and attempt at resection was decided upon.

The thoracic incision was then extended, cutting two ribs above and one below the previous site. The mediastinal pleura was split from the aortic arch to the diaphragm, the lower esophagus mobilized and a traction tape placed about it. The vagus nerves were sectioned, and the esophagus was dissected free from the arch of the aorta to the diaphragm. The diaphragm then was split from the hiatus laterally nearly to the chest wall, the stomach mobilized on both lesser and greater curvatures, keeping well away from the border of the stomach, to preserve the anastomic arches, freeing the stomach down nearly to the duodenum, being careful to preserve the right gastric and the right gastroepiglottic vessels. The left gastric artery and left gastroepiglottic and the vasabrevia to the spleen were all sectioned and ligated. This allowed the stomach to come freely into the chest. Dissection was then carried up along the esophagus behind the arch of the aorta, separating the esophagus from the aorta and from the adjacent bifurcation of the trachea, until the tumor mass was reached. This was then dissected up as far as possible on all sides with the finger, clamping and ligating any cord-like attachments in order to control the blood supply from the aorta to this area of the esophagus.

A special small 2-inch de Martel type of clamp was then placed across the esophagus, just below the arch of the aorta, and closed. The esophagus then was grasped with a special Buie type of hemorrhoid clamp just distal to the de Martel clamp and the esophagus sectioned in between with a scalpel. Two similar Buie clamps were then placed across the esophagus at its junction with the stomach and the esophagus cut across between them, thus removing the lower thoracic esophagus. The stomach defect was then closed with a continuous chromic catgut suture for hemostasis and this defect inverted into the stomach and the closure line reinforced with interrupted silk sutures. A heavy silk suture attached to the small de Martel clamp was then passed around the arch of the aorta and brought out through the mediastinal pleural opening above the arch and posterior to the subclavian artery. Then the esophagus, with the clamp attached, gradually was brought around the aortic arch and out through the pleural opening into the pleural cavity above the arch.

By more finger dissection the esophagus and its tumor was then freed of all attachments, none of which were dense, and delivered into the upper part of the pleural cavity. This was accomplished with considerable difficulty because the tumor was about 4 centimeters long and extended up beyond the line of pleural reflection, so that in order to deliver it into the thorax it was necessary to mobilize the esophagus well above the tumor and to pull it down into the thorax. This involved mobilization of the lower end of the cervical esophagus. Firm traction was then applied to the de Martel clamp to bring the cervical esophagus into the upper chest, and two additional de Martel clamps were placed adjacent to each other above the upper limits of the tumor and closed, crushing across the esophagus. The esophagus was then cut between these two clamps, and the tumor removed from the chest. Closure of these clamps was accomplished with some difficulty because the ordinary de Martel-Wolfenson closure clamp is too large and cumbersome to be used high in the

thorax. For this job we used a specially devised closing forceps made from an ordinary pair of pliers, which grasped and closed the two clamps quite satisfactorily in this limited space.

The upper de Martel clamp which was on the lower end of the cut esophagus then was grasped by the long de Martel clamp holder and traction exerted upon it, pulling the esophagus down in order to start our anastomosis. In order to facilitate this, the clamp holder with attached clamp was rotated posteriorly as traction was applied, thereby exposing the anterior wall of the esophagus. A series of five interrupted mattress sutures were placed through the muscular wall 5 or 6 millimeters proximal to the crushing clamp and the needles left attached to these long silk sutures. An area was then selected on the posterior wall of the stomach, slightly below its upper end and a small button of gastric wall excised. All bleeders were controlled by ligature of fine silk, and all stomach contents aspirated from the organ to prevent soilage in the operative field. The stomach was then elevated to the apex of the pleura which it reached without any tension. The previously placed sutures were completed through the gastric serosa and muscularis, and were tied up, thereby approximating and completing the first row of sutures. The placing of these sutures and the typing was greatly facilitated by the traction which could be maintained on the de Martel clamp still in position on the lower end of the esophagus. Had this clamp not been left in position the esophagus would have retreated up into the neck and prevented anastomosis. Traction might also be maintained by pulling on the esophagus and tumor, but only with greater chance of contamination and more technical handicap because of the very limited space.

A similar set of sutures was placed through the muscular wall of the esophagus above the clamp on the posterior aspect. The needles were left attached again and tagged to be used later to complete the anastomosis. This set was placed again as a precautionary measure for holding traction on the esophagus in case it attempted to retreat after taking off the de Martel clamp. The de Martel clamp then was removed from the esophagus. No attempt was made to excise the crushed portion, a techincal point which we always insisted upon in lower anastomoses because of the poor esophageal blood supply. The mucosa of the esophagus and the adjacent mucosa of the gastric defect were then sutured together in a second anterior row of interrupted mattress sutures of No. 3 silk. A series of five sutures was placed. A nasal suction tube then was passed up the esophagus into the muoth where the anesthetist retrieved it and pulled up the greater length of the tube, leaving only enough to extend down to the pyloric region of the stomach.

A series of five interrupted mattress sutures of silk then were placed in the mucosa of stomach and esophagus, approximating these two layers as the first row of the posterior suture in the anastomosis. The sutures previously placed posteriorly in the esophagus now were completed through the adjacent serosa and muscle of the stomach, the second posterior row finishing the anastomosis. This anastomosis was accomplished only with the greatest difficulty because of its location high in the chest and the extremely cramped quarters which made the placing of all sutures very, very difficult. At best we must concede that the anastomosis was not a perfect one and that leakage might be anticipated. The stomach then was sutured to adjacent pleural structures, with a series of interrupted chromic catgut sutures in order to remove all tension from the anastomotic line. The diaphragmatic defect was then closed by imbrication using interrupted No. 2 forty-day chromic catgut, leaving a fair sized hiatus above the elevated stomach and then suturing the cut edge of the diaphragm to the adjacent stomach wall. The pleural cavity then was washed out thoroughly with copious quantities of salt solution. Five intercostal suction catheters were inserted through the chest wall with their tips placed in strategic locations where fluid might be expected to form or to pool and three grams of sulfathiazole and sulfanilamide dusted around the anastomotic site and in the adjacent pleural pockets. During the whole procedure the lung was reinflated repeatedly in order to prevent permanent atelectasis.

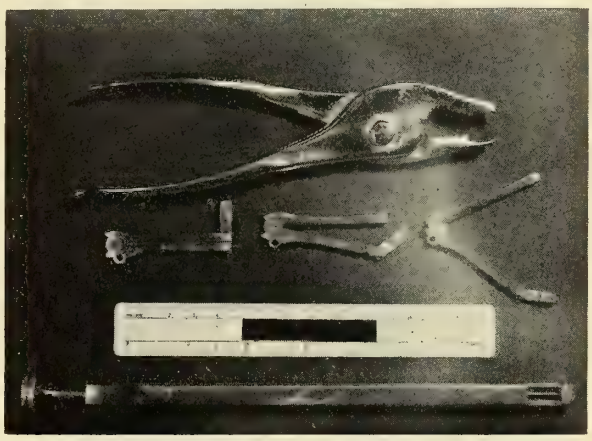


Fig. 1. Miniature De Martel clamps, closing forceps, and holding clamps.

The chest wall then was closed in layers as in any other thoractotomy, after inserting about 300 cubic centimeters of salt solution into the chest to prevent clotting of any oozing blood which might plug our suction catheters. The patient tolerated the extensive and very prolonged (fourteen hours) surgical procedure very well. While on the table he received a total of 6 liters of blood, 500 cubic centimeters of normal saline and 500 cubic centimeters of 5 per cent dextrose in normal salt solution. He was returned to this bed in good condition and placed in an oxygen tent. Continuous suction was applied to the stomach tube and continuous suction at minus 20 centimeters of water applied to the intercostal catheters in order to remove all fluid from the pleural cavity and to keep the lung expanded. Penicillin and sulfadiazine were administered postoperatively and adequate amounts of fluid given subcutaneously and intravenously for the first seven days, during which time nothing was allowed by mouth. He developed a great deal of mucus in his chest postoperatively but this was removed successfully by using a suction catheter through the tracheotomy opening. After the fifth postoperative day, small amounts of water were inserted through the nasal catheter as soon as it was evident that the pylorus had opened up from the effects of the vagotomy. Increasing amounts of liquids were then given through the catheter until after the seventh day when liquids were given by mouth.

The patient was discharged from the hospital on November 25, 1947, ambulatory, on his twenty-sixth postoperative day. On November 20, 1947, his twentieth postoperative day, the anastomotic orifice was dilated over a string up to a No. 38 French dilator in order to be sure that the lumen of the anastomosis was adequate. There is a very considerable tendency for stenosis to develop in the anastomotic site, particularly where constructed under considerable technical difficulty, so he may have to be dilated on a number of occasions subsequently. His condition has remained good since that date, with only the usual discomfort which accompanies distention of the stomach in the chest and some cutting down of his breathing space by such pressure.

Of course, he has also had the usual gastrointestinal disturbances incident to the vagotomy necessary in such a procedure. Recently Dr. Boman wrote that he is feeling very well, swallowing freely, and that a No. 46 French dilator may be massed without meeting obstruction, so the anastomosis has been kept at full lumen. The illustrations will give a good idea of the original lesion, the position of the stomach in the thorax, and the location of the anastomosis at the level of the sternoclavicular joint.



Fig. 2. Postoperative view of a high esophagogastrostomy.

The de Martel clamps which we have used in the anastomosis were especially devised for this procedure. They are identical in form and line with the larger de Martel clamps but are only 2 inches in length, which is adequate for the ordinary undilated esophagus. Such clamps offer distinct advantages in this type of surgery. In the first place they do not slip off the crushed esophageal stump and are therefore safer than an ordinary ligature which has been used as the esophagus is passed behind the aortic arch, as is necessary in this procedure. Secondly, by the use of this clamp it is possible to use traction in the esophagus to pull it down and hold it until sutures are placed to maintain it in position. Thereby, a higher anastomosis is made possible than could be done without the use of this device. It may be used also to advantage in similar situations in other places, such as for control of the esophagus in total gastrectomy, or even in the colon, deep in the pelvis, where an end-to-end anastomosis is to be made.

This case report illustrates what can be done in the way of total resection of the thoracic esophagus and re-establishment of intestinal tract continuity by anastomosis of the cervical esophagus to the elevated stomach. The freely mobilized stomach easily reaches the apex of the pleura without tension, and I am sure that the stomach or a portion of it may be brought even into the neck, where an anastomosis at a higher level may be accomplished perhaps with less difficulty than the present one.

Discussion

Dr. Magney, Duluth: I am not acquainted with the modern procedure, but I recall the good old days when we dilated carcinomas of the esophagus. During my internship at the Ancker Hospital I prevailed on Dr. Ancker to purchase a dilating outfit, which in itself was quite an accomplishment. I was saved from embarrassment by the patient's inability to swallow the string. That night the patient died suddenly due to rupture of the aorta which the cancer had invaded.

Dr. R. E. Hultkrans: What percentage of all carcinomas of the gastrointestinal tract does carcinoma of the esophagus constitute?

Dr. Schlemenson: I should like to ask Dr. Kinsella what his experience has been in the use of radium therapy in the treatment of carcinoma of the esophagus.

Dr. Kinsella: Carcinoma of the esophagus constitutes about 2 per cent of all carcinomas; carcinoma of the lung, 12 to 15 per cent; carcinoma of the colon, about the same, 15 to 20 per cent.

Radiotherapy has not accomplished much with these patients. Most of these tumors are squamous cell epitheliomas. This area of the gastric mucosa does not respond well to x-ray therapy. You can maintain a lumen by use of a string.

REPORT ON A TOUR OF EASTERN SURGICAL CLINICS

ARNOLD J. KREMEN, M.D.

Minneapolis, Minnesota

It is a deep pleasure to be able to recount to this audience my experience on a tour to a number of the outstanding surgical clinics in the East and Midwest. Before proceeding, I wish to acknowledge my gratitude and appreciation to Dr. Owen H. Wangensteen and Dean H. S. Diehl and the University of Minnesota for having made this trip possible. The purpose of my trip was principally to investigate recent trends and developments in clinical surgery and research, to examine the teaching programs of the various schools and to observe the physical facilities, principally of operating suites that might advantageously be put to use in our own hospital.

During such a trip one forms a number of impressions, one of which has remained throughout the trip. To me the lack of productiveness of the large hospitals over 1,000 beds was quite striking. They seemed to get out of hand, so to speak, and lacked a unity of purpose or personal direction and interest. Some of the smaller hospitals, on the other hand, such as Massachusetts General Hospital of Boston and Strong Memorial Hospital of Rochester, New York, where the direction of the service was more closely supervised and the staff was a more closely knit group, appeared

to be achieving a greater over-all contribution to medicine. I have the impression that the optimal size for a teaching hospital is somewhere between 600 and 800 beds.

Time will not permit a detailed account of each institution, but I shall try to relate to you the highlights of each clinic as they appeared to me.

Tulane Medical School, New Orleans

Drs. Champ, Lyons and DeCamp are enthusiastic about preparing poor-risk patients for major surgery by multiple blood transfusions. They have written about "chronic shock" and have pointed out the contracted blood volume which occurs as an accompaniment of the malnourished state. Of most importance in this regard, they feel, is the total hemoglobin deficit. Correction of this plus the contracted blood volume by multiple whole blood transfusions during the preoperative period of preparation is their principal concern.

Dr. Alton Ochsner is quite partial to the use of cotton as a suture material. He uses it by preference in almost all cases and feels it has less tendency to be the cause of granulomas and to sequestrate than does silk. On the problem of thrombophlebitis, Dr. Ochsner stated his position is midway between Rochester, Minnesota, and Boston, Massachusetts. With a twinkle in his eye he said, "We ligate those that need ligation and give anticoagulants to those that need anticoagulants." I couldn't get him to expand on the problem much beyond that. He does feel that procaine sympathetic blocks have a definite therapeutic role in treatment of acute thrombophlebitis. He did not feel that vagotomy was proving its claims in the treatment of ulcer and stated that, in his opinion, gastric resection was still the treatment of choice in those ulcer patients who required surgery.

Dr. DeBakey stated that he was disappointed with most tests at present which attempt to portend the response to sympathectomy. As a result he has been extending lumbar sympathectomy to all patients with vascular insufficiency of the lower extremity. There have been a number of gratifying results in patients in whom the outlook before operation was almost hopeless. Also in those who subsequently required amputation it was possible to perform the amputation at a lower level than would have been necessary otherwise.

Barnes Hospital, Washington University, St. Louis

Drs. Graham and Burford are of the opinion that palliative pneumonectomies are not worthwhile. In contradistinction to the gastrointestinal tract, where it is well recognized that resection of neoplasms even in the presence of unresectable metastasis is a worth-while procedure, in that it extends the patient's life and makes him more comfortable, in carcinoma of the lung such palliation or prolongation of life has not resulted, in their experience. Dr. Graham stated that he was not aware of any successful pneumonectomy in a patient past seventy years of life. Of 1,000 thoracotomies that they have done for carcinoma of the lung, they have been able to resect 22 per cent of the cases.

Because of Dr. Graham's special interest in thoracic surgery, they have a superb chest service. The general surgical services, on the other hand, although of high calibre, did not appear to be on a par with the chest service.

Dr. Robert Elman is continuing electrolyte balance studies in surgical patients. Of interest is his finding that sodium chloride requirement in the average patient, without loss of intestinal content, is in the area of 2 grams per day.

Vanderbilt University, Nashville

Of special interest to me at the Vanderbilt Hospital was an exceptional sterile supply suite. It consisted of two large rooms completely separated by a partition which contained the autoclaves. These opened at both ends. In one room all unsterile materials were processed and put into the autoclaves. The sterile materials were removed from the other end of the autoclave in the second or sterile room. Hence all materials in one room were unsterile, and in the other room on the other side of the partition, all materials were sterile. The surgical service there is an excellent one under the direction of Dr. Brooks and associates, MacSwain and Daniels. Dr. Hahn has been doing some very interesting work with radioisotopes. They are in the advantageous position of being close to Oak Ridge and have done some of the fundamental work with radioiodine and gold.

Johns Hopkins Hospital, Baltimore

Unfortunately, Dr. Blalock was in England at the time of my visit so I missed the opportunity of visiting with him and seeing him operate. Dr. Longmire was carrying on in his stead and made the Blalock and portocaval operations look amazingly simple. Much of the experimental work in progress at the time related to problems pertaining to the cardiovascular system. On the general surgery service they were doing total gastrectomies routinely on all cases of carcinoma of the stomach. They admit it to be an experimental venture to see if the more radical operation applied to all cases, rather than to a selected few, will extend the cure rate.

University Hospital, University of Pennsylvania, Philadelphia

Dr. Ravdin and his associates have one of the outstanding clinics I had the opportunity of visiting. The clinical work was excellent; the research program and facilities were eminently good. Drs. Parkins and Rhode, by using a polythene tube in the vena cava of dogs, have maintained a continuous intravenous infusion for forty days. They administered 50 per cent glucose at the rate of 20 c.c. per kilogram per day (the equivalent of 1,500 c.c. to a 70 kg. man) over a twenty-four hour period without observing glycosuria or thrombosis. When given into a vein with a large enough flow, sufficient dilution of the glucose takes place immediately to prevent damage to the vessel.

From bacteriological studies of bowel content, Dr. Zintel and associates think that streptomycin given

orally in amounts of 1 gram daily in divided doses for four to six days is the most effective agent available in reducing the bacterial count of the stool.

New York Hospital, Cornell University, New York

In Dr. Ephriam Shorr's laboratory, Dr. Wheadon has been carrying on some very interesting studies relating to convalescence. He has noted a fairly marked nitrogen loss, occurring in normal people on adequate diets, as a result of the immobilization incident to going to bed. This began on the fourth day and continued up to the tenth day. Concommitantly, he noted an increased urinary calcium excretion unassociated with an increased citrate excretion which would tend to hold the calcium in solution. In addition the pH of the urine tends to rise further, increasing the tendency for the calcium to precipitate from solution.

In the operating suite they have installed a recovery ward where all postoperative patients are kept up to twelve hours or until they are awake, stabilized and responding. Two nurses, under the direction of the anesthesia and surgical house staff, look after the patients and give whatever supportive measures are necessary. They have found this arrangement to be of considerable assistance in relieving the load of nursing care on the surgical wards, and to offer better immediate postoperative care for the patients.

New Haven Hospital, Yale Medical School, New Haven

Of special interest at Yale was the work Dr. Darrow is doing on electrolyte balance. He has shown that in the diarrheas of infancy there is a considerable loss of potassium from the body which should be replaced. Furthermore, in some dehydrations there may be a shift of sodium ions into the intracellular compartment with loss of potassium from the cell. One of the things necessary to correct this situation may be administration of potassium ions. There appears to be a continuous loss of potassium from the body which normally is relatively small and probably of no major importance for a period of several days. However, over a longer period of negative potassium balance one should strongly consider replacing potassium deficits. The kidney does not appear to be able to selectively retain potassium as it does sodium. On the basis of Dr. Darrow's work, one's outlook on fluid balance problems should probably include the intracellular compartment and its requirements, in addition to the conventional concepts of extracellular and blood compartments that have absorbed the attention of most clinicians to date.

Harvard Medical School, Boston

The organization of the medical facilities of Boston under the direction of Harvard Medical School seems to me to be an outstanding administrative achievement. Four units, Massachusetts General, Beth Israel, Children's and Peter Bent Brigham Hospitals, are each autonomous but responsible to the over-all direction of the Harvard faculty. Each carries out its teaching functions, research program and clinical work independently but are bound to the medical school for top level policy, for leadership in maintaining standards of practice and to further the over-all teaching program. Each hospital gives up an iota of authority to the Harvard Medical School, but in return they gain tremendously in prestige in the community and on a national scale throughout the profession.

At Massachusetts General, considerable work is in progress under direction of Drs. Cope and Moore using radiosotopes in studies of intracellular metabolism. At Beth Israel Hospital, Fine and Seligman are continuing their excellent work on shock. They have recently demonstrated that one of the factors determining reversible or irreversible shock is the status of the hepatic circulation. By cross circulation experiments whereby they maintained an adequate hepatic circulation, animals would withstand procedures which in control preparations uniformly produced irreversible shock.

Dr. Swenson at Children's Hospital related some interesting esophageal work going on there. He has been able to resect 50 per cent of the thoracic esophagus in dogs, mobilize the remaining segments and do successful end-to-end anastomosis. In tracheo-esophageal fistula he is regularly doing primary anastomosis. On some of the earlier cases upon whom cervical esophagostomies had been performed, he has reoperated, mobilized thoracic and cervical esophagus and effected end-to-end anastomoses. In Hirshsprung's disease, Dr. Swenson feels the primary abnormality is a spasm in the area of the rectosigmoid. This can be demonstrated by barium enema if given slowly. He has had some encouraging results by resection of the involved area of sigmoid and rectosigmoid and doing a low anastomosis.

Strong Memorial Hospital, University of Rochester, Rochester, N. Y.

The medical school at Rochester was among the best of the schools visited. The beneficent influence and direction of Dr. George Whipple pervades the entire atmosphere. He has been dean and professor of pathology since the school was founded in 1925, and much accomplished there has been due to his wise leadership and foresight. The group at Rochester have been leaders in investigative work on protein metabolism. They feel that intravenous plasma protein is utilized in the general protein economy of the body. Recently, they have maintained a dog in nitrogen equilibrium for ninety-two days, during which time the only protein intake was intravenous plasma transfusions. Proteinuria developed after about a month on intravenous feedings, but nonetheless, the animal did not go into a state of negative nitrogen balance. They feel that there probably is a renal threshold value for protein, as is well known for other materials and when this threshold is exceeded proteinuria results. Apparently no organic renal lesions occurred as a result.

Dr. Basset mentioned the use of testosterone to promote nitrogen retention. In addition, it appears to promote water retention. On the other hand, in starvation a decreased excretion of 17-testosteroids has been noted, which may suggest a decreased testosterone formation under those conditions.

Clinically, their interests have been many and varied. Recently, they have gained an experience in doing sympathectomy for hypertension by the transpleural route and seem to prefer it over the other approaches.

Buffalo General Hospital, University of Buffalo, Buffalo

Dr. John Paine, formerly of our own school, recently has assumed the duties of professor of surgery at Buffalo. John is doing a splendid job of reorganizing the service and expanding the laboratory facilities. He has performed successfully the first patent ductus ligation and Blalock operations done in Buffalo. Dr. Paine is well and happy and would like to be remembered to all his friends in this audience.

University of Michigan, Ann Arbor

At Ann Arbor a number of interesting projects are in progress. They have been doing lumbar sympathectomies on a large group of patients with arterial vascular insufficiency of the lower extremities. Their views and findings are quite similar to those of DeBakey in New Orleans related earlier in this paper. In the group of diabetics where the outlook for vascular insufficiency has been exceptionally grim, they have experienced some encouraging results.

They are continuing studies of fluid and electrolyte balance and have also come to appreciate that potassium losses over a period of time may be of sufficient consequence to require replacement.

After a trip such as I have outlined to you this evening, one returns home with mixed feelings. One is full of new ideas, one sees famous institutions and men, one gets to see the surroundings from which so many of the contributions to medical literature and practice arise. I believe that in the future, after such an experience, one will be better able to evaluate these contributions critically and judiciously. Certainly as a result of even a momentary familiarity with their source of origin, articles originating from these institutions will mean much more to the visitor. Such is the value of travel. But it also has another virtue. On gaining a familiarity with distant places having a certain aura of fame and glamour associated with their name, one returns home to experience a sense of contentment and satisfaction with one's own workshop and colleagues.

VOLVULUS OF THE SIGMOID

(Continued from Page 653)

colostomy opening. Later, an anastamosis between these two parts of the sigmoid may be made. This procedure would seem to have some merit.

Recently, two cases of volvulus of the sigmoid colon have been operated upon by me in which there was evidence of minimal gangrene of the bowel. Both patients were in good condition at the time of operation. A primary resection of the gangrenous bowel was performed with end-to-end anastamosis, using a running inner row of 000 chromic catgut and two rows of interrupted 000 silk sutures. The walls of the cut ends of the sigmoid were edematous but were thick and hypertrophied; it was felt that the anastomosis could be safely made. The patients made an uneventful recovery, and both were discharged from the hospital within ten days after the primary resection.

In cases of acute obstructions of the large bowel, it is realized that it is best to decompress the bowel before doing a primary resection. However, in volvulus of the sigmoid colon our experience would indicate that if the patient is in good condition and the colonic distention is not too great, a primary resection and anastamosis of the sigmoid may be carried out successfully.

Comment

It is realized that patients with volvulus of the sigmoid are usually elderly and debilitated, and are poor risks because of this condition. Such patients have been treated in the past by a Mikulicz type of exteriorization resection which, as has been pointed out, entails certain inherent risks. The use of this procedure in this type of obstruction accounts in part for the high operative mortality. The following outline of therapy is suggested:

1. If gangrene at the site of torsion and serious bowel damage can be ruled out, proctoscopy and passage of a tube to deflate the distended sigmoid will be carried out. The tube will be left in site for a few days, after which the volvulus of the sigmoid loop will be resected and an end-to-end anastamosis performed.

2. If the above complications are present or intubation per rectum is not possible, the patient should be explored. Rather than do a Mikulicz exteriorization and resection, the gangrenous bowel will be resected, the distal stump of the sigmoid inverted and buried, and the proximal part brought out as a colostomy opening. If the patient is in good condition, the bowel shows no or slight gangrene, and the distention is not too great, a primary resection with end-to-end anastamosis of the sigmoid may be considered.

References

1. Bruusgaard, C.: Volvulus of the sigmoid colon and its treatment. Surgery, 22:466, 1947.
2. Wangensteen, O. H.: Intestinal Obstruction. Second edition. Springfield: Charles C. Thomas, 1947.

Minnesota Academy of Medicine

Meeting of February 12, 1948

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Thursday evening, February 12, 1948. Dinner was served at 7:00 p.m. and the meeting was called to order at 8:00 p.m. by the president, Dr. T. A. Peppard.

There were thirty-three members and three guests present.

Dr. E. M. Hammes read the following Memorial to Dr. Alexander R. Hall, and a motion was carried that this be spread on the records of the Academy and a copy sent to Mrs. Hall.

ALEXANDER RITCHIE HALL, 1874-1947

Alexander Ritchie Hall died suddenly at home Thanksgiving morning, November 27, 1947, while preparing to be host at the family dinner, which he always enjoyed so much. He was seventy-three years old.

Dr. Hall was born April 25, 1874, at Washington, Ontario, Canada, the son of Thomas and Agnes (Bobson) Hall. He attended common and high schools at Washington, St. Catherine and Woodstalk Collegiate Institutions, all in Ontario, Canada.

Dr. Hall was graduated from McGill University Medical School, Montreal, in 1902. He was interned at Montreal General Hospital after which he went to England for postgraduate work qualifying to practice as M.R.C.S. and L.R.C.P. in 1903. He came to Saint Paul in 1904 to enter medical practice with offices in the Moore Building, Seven Corners. He was associated with the late Dr. Arnold Schwyzer for four years, from 1904 to 1908. He was one of the original members of the Miller Clinic, also a captain in the English Army.

He was a member of the Ramsey County Medical Society, the Minnesota State and the American Medical Associations, a Fellow of the American College of Physicians and a member of the Minnesota Academy of Medicine, of which he was president in 1935. His thesis was given on "Status Lymphaticus," December 6, 1911, and his address as retiring president was on "Hypoglycemia." Both papers were published. He was also a member of the Minnesota Society of Internal Medicine, the Saint Paul Clinical Club, Delta Upsilon and Nu Sigma Nu fraternities. He served as chief of "A" Medical Service at Ancker Hospital for many years, with teaching arrangements with the University Medical School, and served as chief of staff in 1933.

Dr. Hall retired from practice about a year ago, having previously suffered a cerebral hemorrhage, but he kept up his visits to Ancker Hospital and was loved for his kindly teachings by many groups of interns who admired him greatly.

Alec Hall enjoyed the outdoors, being an ardent hunter and fisherman, and was most considerate of his friends on these many outings.

Dr. Hall was married in 1928, and his widow, Maude Perry Bowman Hall, survives him, as do a brother, Oliver Hall, and a sister, Dr. Jean Hall, both of Canada.

Dr. Hall was a kindly gentleman, a fine friend and an able physician. The following precept, attributed to the American Quaker, Stephan Grellet, certainly could have been his:

"I shall pass through this world but once; any good thing therefore that I can do or any kindness that I can show any human being, let me do it now. Let me not defer or neglect it for I shall not pass this way again."

His passing leaves a definite memory of such a man.

(Signed) E. V. Goltz, *Chairman*
Carl B. Drake
J. Felton Hammond
E. V. Kenefick
E. M. Hammes.

The scientific program followed.

Dr. Moses Barron read a paper on "Streptomycin in Tuberculosis." Two cases were reported, and one of the patients was presented at the meeting.

STREPTOMYCIN AND TUBERCULOSIS

MOSES BARRON, M.D.
Minneapolis, Minnesota

When Dr. Waksman and his associates discovered streptomycin, they gave to the world the first drug which has proved capable of altering the course of human tuberculosis. They found that this antibiotic was also effective against many Gram-negative bacteria. In a large series of cases treated with streptomycin, satisfactory results were obtained in the treatment of (1) urinary infections and infections with bacillus coli, proteus, pyocyaneous, and Friedlander's bacillus, (2) influenzal meningitis, (3) tularemia, (4) brucellosis, and (5) a miscellaneous group. Its effectiveness in many of the above infections has proven to be as great as that of penicillin in the pneumonias.

About a year after its discovery, Drs. Hinshaw and Feldman of the Mayo Clinic reported that streptomycin had a strong suppressing effect on tuberculosis, both of animals and of humans. It has proved effective in peritonitis following ruptured appendices or other ruptured viscera. One of the difficulties encountered with streptomycin is the early development of bacterial resistance to the drug, especially in tuberculosis. Its effect on tuberculous infections is at times very dramatic, especially in the acute hematogenous and exudative types. Very favorable results have been obtained in from 10 to 20 per cent of cases of tuberculous meningitis. Chron-

ic fibrocaseous types of pulmonary tuberculosis with cavitation do not respond. Resistant strains seem to appear in from four to eight weeks following the onset of the treatment. Toxic effects are usually mild in short courses of treatment, but in prolonged courses the more serious of these is the development of vestibular dysfunction, with vertigo, dizziness, and on occasions even deafness. This toxic effect occurs mostly from the use of large doses of from 2 to 4 grams daily over periods longer than three or four weeks. The vertigo may persist indefinitely, and when recovery occurs it is usually through some compensatory mechanism. The second rather severe complication is nephropathy. This may proceed to renal insufficiency. However, the renal damage which develops in about 3 per cent of the cases treated seems to be reversible, and usually goes on to healing and complete restitution after discontinuance of the drug. Streptomycin seems to be of little or no value in virus infections. In many cases of pulmonary tuberculosis the beneficial results are very striking. The sedimentation rate is decreased, positive sputa are converted into negative ones, fever is lowered or abolished, and the cough is reduced and often stopped. There may be a progressive gain in weight. Recent experience has shown that a dosage of 1 gram a day is just as effective as the larger doses previously used, and at the same time toxic effects are almost eliminated. It must be borne in mind that it is too early to claim cures of tuberculosis with streptomycin, no matter how good the results may be. We can only state that the cases treated have been arrested, and that the results seem better than with the methods previously used. However, the old routine of rest, diet and pneumothorax is still necessary in the management of most cases of tuberculosis.

I have had the opportunity of studying two cases of tuberculous peritonitis which have responded exceedingly well to streptomycin.

Case 1.—Mrs. N. J., aged thirty-nine, was admitted to the Asbury Hospital on October 17, 1946, with complaints of abdominal distention of about two months' duration and obstruction of the bowels of about two weeks' duration. During the previous month she had had fever, dyspnea, anorexia, malaise and insomnia.

Past History.—At the age of twenty-one she became sick with what was diagnosed pneumonia. She developed a pleurisy in the right chest. This was aspirated, and tubercle bacilli were found in the fluid. She made a complete recovery from the infection except that the right chest gradually seemed to shrink and became quite flat. She became entirely well and remained well up to the present illness. At no time did she have any cough. About October 5, 1946, she developed pain in both legs, as well as in the elbows and knees; her fever at times rose to 102°, and the abdomen slowly swelled. She developed progressive dyspnea. From about October 10 on, she became practically bedridden because of weakness and shortness of breath. She became markedly bloated and had pains and tenderness in the abdomen. She was sent to the Asbury Hospital by her doctor on October 17, 1946, with a diagnosis of intestinal obstruction.

Physical Examination.—The patient was very uncomfortable because of shortness of breath and tightness of the abdomen. Temperature was 102.6°, pulse 125, respirations 28 to 30; the blood showed hemoglobin 97 per cent, white blood cells, 7,700; and the urine showed a trace of albumin, a few pus and red blood cells. Blood cultures were negative. On examination, the right chest was greatly retracted, flat, and immobile; numerous loud coarse râles were present throughout the right chest, and breath tones were very distant. The left chest was entirely negative. A diagnosis of chronic adhesive tuberculous pleuritis and tuberculous peritonitis was made.

Paracentesis of the abdomen yielded 2,000 c.c. of a turbid light brown fluid. It showed 890 cells per cubic centimeter with 76 per cent mononuclears, 24 per cent polymorphonuclears, and there were 4.3 grams protein per liter. No tubercle bacilli were found. An x-ray of the chest showed extensive thickening of the pleura of the entire right chest; the left lung was entirely clear.

The patient at first was placed on 30,000 units of penicillin and 5 grams of sulfadiazine daily. On October 19 this was discontinued, and she was placed on 200,000 units of streptomycin every three hours. On November 15 this was increased to 250,000 units every four hours. From then on there seemed to be progressive improvement. The remaining fluid in the peritoneal cavity cleared completely, she felt stronger and her temperature receded to about normal. On November 26 she began sitting up at the side of the bed. She began noticing vertigo and was given niacin and benedryl. Temperature dropped down to normal and remained so for several weeks before discharge. Pulse ranged between 70 and 100. Dr. Wesley Spink of the University was called in consultation, and he corroborated the diagnosis and concurred with the treatment. She left the hospital on December 18, 1946.

Not long after returning home, she noticed that the abdomen had begun to enlarge again and the temperature had begun to rise. She was readmitted to the hospital on February 15, 1947, with a temperature of 101.6°. She was now given 375,000 units of streptomycin every three hours. This was later changed to 500,000 units every four hours. She promptly began to improve, and the fluid slowly disappeared from the peritoneal cavity without aspiration. The temperature also started to decline. After March 8 it did not exceed 99°. After April 13 for several days it again reached about 100°, but after May it did not rise above 99.6°. Her pulse was 90 to 110, and general condition was excellent. The patient was discharged May 16. This time on discharge the vertigo was quite pronounced. She would sway from side to side in walking and would have to hold on to something. Gradually this left her, but she is still somewhat dizzy and at times a little uncertain in her gait. There has been no recurrence of the peritonitis. The abdomen is soft, not tender, and appears entirely normal. When last seen, December 22, 1947, she seemed to be in good physical condition.

Case 2.—Mr. E. B., aged fifty-seven, was first seen September 25, 1947. He complained of gas and belching of about a year's duration, some dysuria, some alternating constipation and diarrhea for about a year, progressive weakness, pain and tenderness in the abdomen, and swelling of both legs.

Physical examination showed him to be 5 feet, 7½ inches tall, weighing 133 pounds. Blood pressure was 114/70; the heart seemed normal, with tones of good quality, the abdomen was somewhat distended, tympanitic and tender throughout, especially at the right lower quadrant. A small tender mass in the region of the cecum was felt. The tenderness had been increasing the previous six weeks. The right testicle was atrophied and there was edema of both legs from the knees down. The urine was negative. Hemoglo-



Fig. 1 (Case 2). Photomicrograph of a section of peritoneum. The endothelial surface is above. Note the closely approximated tubercles containing large giant cells.

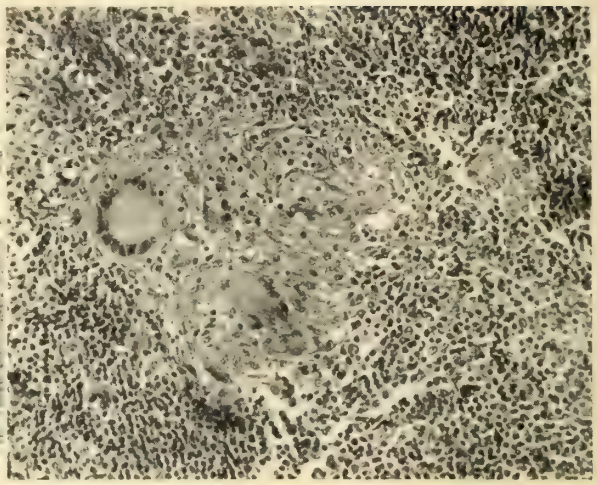


Fig. 2 (Case 2). A tubercle in a lymph node shows a nest of epithelioid cells and two giant cells.

bin was 75 per cent, white blood cells 7,200. An x-ray of the chest showed the heart not enlarged; the lungs showed a hard, dense shadow at the right apex mesially. The x-ray diagnosis was an arrested fibrous tuberculosis of the right upper lobe. The electrocardiogram was negative. Because of the abdominal discomfort, gastrointestinal x-ray studies were ordered. These were reported as showing extensive massive carcinoma involving the proximal half of the stomach. X-ray of the colon also showed a definite deformity of the cecum, rather extensive, with changes extending into the terminal ileum. This suggested a diagnosis of tuberculosis of the cecum and terminal ileum.

The patient was admitted to the Asbury Hospital on October 6, 1947. He was given several transfusions preparatory to operation. A laparotomy was done by Dr. Maxeiner on October 20. The findings were very surprising as well as striking. The entire peritoneum, both visceral and parietal, was studded with myriads of tubercles 1 to 2 millimeters in diameter. The stomach, omentum and mesentery were completely covered with tubercles, but there was no evidence of a neoplasm in the stomach. The cecum showed an indurated mass, probably inflammatory. Small pieces of tissue from the peritoneum and several lymph nodes were removed for microscopic study. Microscopically they showed an active type of miliary tuberculosis with areas of necrosis and large giant cells (Figs. 1 and 2). Temperature on admission was 100°, which rose to 102° and then fluctuated, reaching 103.6 following the operation. On October 26 streptomycin was started, 400,000 units intramuscularly every eight hours. On November 7 his weight was 113 and on November 29 it was 123 pounds. His blood showed 77 per cent hemoglobin, 7,800 white blood cells.

He improved very rapidly, so that a re-ray of the stomach, December 15, showed an absence of the deformity which had been diagnosed carcinoma in the previous gastrointestinal study. The cecum still showed deformity. He started getting up and around, was gaining in weight and in strength, and he left the hospital, December 24, feeling quite well. The tenderness of the abdomen had completely disappeared, and the mass at the cecum had also cleared. Pulse was 66, blood pressure normal. When last seen on February 11, 1948, he was feeling entirely well, had no complaints, was up and around and had a very good appetite. The abdomen appeared entirely normal.

Discussion

These two patients present a complete change of prognosis in cases of advanced tuberculous peritonitis. The disease in both cases has been definitely arrested. As to whether this will remain permanent or not, only the future will tell. However, the discovery of streptomycin has definitely altered the outlook and the course in a large variety of infections, including those caused by Gram-negative bacteria, but especially in certain types of tuberculosis. The literature presents an increasing number of articles dealing with the excellent results obtained in the use of streptomycin in tuberculosis as well as in other infectious diseases.

Discussion

Dr. William B. Tucker: This is very much the tail that is *not* going to wag the dog. Dr. Barron has so far very well covered the whole problem of the treatment of various tuberculous conditions with streptomycin. All that streptomycin has done for us is to *aid* in curing tuberculosis. The action of the drug is suppressive at best, and it still remains for resistance of the body to overcome the disease. The probable mechanism of action of streptomycin on tubercle bacilli is related to the problem of bacterial resistance. Apparently streptomycin is bacteriostatic. Tubercle bacilli divide by fission and increase in size, and only when they have attained a certain size do they appear to be capable of reproduction. The action of streptomycin seems to be suppression of growth and reproduction, not killing. It has now been established that not all tubercle bacilli are suppressed by streptomycin. Probably all populations of tubercle bacilli initially contain a small percentage of bacilli which are resistant to streptomycin, but the action of streptomycin is greater on the vast majority of tubercle bacilli in the population which are sensitive, and gradually over a period of time those that are not resistant are suppressed, but the others keep on growing and reproducing. Finally the initial percentage is reversed, a few may still be sensitive, but the vastly higher percentage is resistant.

As in all chemotherapy, one has to take into account the ratio between therapeutic dosage and that causing toxicity. Where the range between the two is high we have little difficulty. Such is not the case with strep-

TABLE I. DEVELOPMENT OF RESISTANCE TO STREPTOMYCIN

Percentage of organisms resistant to 10 mcgm./c.c. or more.

	2gm./day	1 gm./day
After 60 days treatment	35	33
After 90 days treatment	70	74
After 120 days treatment	83	96

TABLE II. INCIDENCE OF TOXICITY

Percentage of patients manifesting toxic reactions.

	2 gms./day in 5 doses	1 gm./day in 2 doses
Vertigo	92	17
Diminished caloric stimulation	77	12
Eosinophilia (over 4%)	70	22
Renal irritation	67	16
Impairment, renal function	1	0
Gastrointestinal disturbances	10	6
Paresthesia	3	4
Deafness	1	0
Fever	8	5
Dermatitis (mild)	18	0
Leukopenia	2	0
Treatment stopped or interrupted because of toxicity	8	3

This last statement is demonstrated from the figures given in Table I.

Allowing for the size of samples, there is no significant difference in the rate of development of resistance to streptomycin on the two dosage regimens.

The point made earlier, as to the reduction in the incidence of toxic manifestations on the smaller daily doses, is illustrated in Table II.

There can be no question as to the significance of the reduction of incidence of toxic reactions on the 1 gm./day as compared with the 2 gm./day regimen. It is entirely probable that as still smaller doses are explored, still further reductions in toxicity will be made possible.

Enough experience has now been accumulated to know in what tuberculous conditions streptomycin is most effective, moderately effective, or least effective. The experience at the Minneapolis Veterans Administration Hospital is best summarized in Table III.

The conditions have been listed in approximately the rank of the decreasing effect of streptomycin with respect to improvement of the condition.

That these results are not atypical, Table IV is presented to indicate how closely the results here correspond to the over-all experience of the other Veterans Administration Streptomycin Study Units.

TABLE III. RESULTS OF STREPTOMYCIN THERAPY ON TUBERCULOSIS IN THE MINNEAPOLIS VA HOSPITAL

Treatment-completed cases only

	Healed	Improved	Unchanged	Worse	Total	Died
1. Glandular	4	1			5	
2. Alimentary Tract	2	2			4	
3. Sinuses-Fistulas	4	2	1		7	1
4. Laryngeal	3	5	2		10	1
5. Tracheobronchial		5	1		6	
6. Skin-Pericardial		2			2	
7. Genito-urinary	1	4	4	1	10	
8. Empyema		1	1		2	1
9. Pulmonary		10	2	7	19	6
10. Bone and Joint		1		1	2	
11. Miliary-Meningeal	1	1		3	5	3
Totals	15	34	11	12	72	12

tomycin. One great difficulty in the use of streptomycin has been to find a therapeutically effective dose which will avoid the complications of toxicity.

The Veterans Administration has twenty-one hospitals throughout the country which have been co-operating with the army and the navy, and these hospitals have had an unparalleled opportunity for making a study of these problems. The Minneapolis Veterans Administration Hospital began its share in the study just a year ago yesterday when we treated our first patient. The Veterans Administration Streptomycin Study Program as a whole has treated over 1,000 patients and we have learned the following, very briefly:

1. It is not necessary to treat with as high doses as originally thought, as Dr. Barron has indicated. We are in the process of studying even smaller doses, and maybe 0.5 gram, or even 0.2 gram a day, is as effective as 1 gram.

2. We have also learned that it is not necessary to give numerous injections every day. We are now using two doses a day, but there may be no reason why we should not give it every other day or once a week. The probable explanation for this is related to the life cycle of the tubercle bacilli.

3. Another point clarified has been the relation of toxicity to dosage. On 1 gram a day the toxic manifestations of earlier larger doses have been largely eliminated.

4. We still have not avoided the other horn of the dilemma—the development of resistance to streptomycin on the part of some tubercle bacilli. The rate of development of bacterial resistance is probably as rapid with smaller as with larger doses.

TABLE IV. APPROXIMATE RANK OF EFFECTIVENESS OF STREPTOMYCIN IN VARIOUS TUBERCULOUS CONDITIONS

Type of Tuberculosis	20 V.A. Study Units	Minneapolis
Group A: Effective (85%-90% Improvement)		
Sinuses and Fistulae	1	3
Alimentary Tract (Mouth, Intestinal, etc.)	2	2
Laryngeal	3	4
Tracheobronchial	4	5
Glandular	5	1
Group B: Moderately Effective (60%-80% Impr.)		
Genito-Urinary	6	7
"Rare Medical" (Skin, Serous, Iritis, etc.)	7	6
Empyema	8	8
Pulmonary	9	9
Group C: Limitedly Effective (30%-45% Impr.)		
Bone and Joint	10	10
Miliary and Meningeal	11	11

In summary, then, we have learned a great deal about the relative degrees of effectiveness of streptomycin in various tuberculous conditions, and have found 1 gm./day an effective dose, and one which appreciably reduces the incidence of various toxic manifestations. There still remains the serious problem of the development of bacterial resistance to streptomycin. The period of most rapid development of resistance may be as early as between forty-five and sixty days. And the development of resistance to streptomycin is probably largely an irreversible phenomenon. It behooves us, in considering streptomycin therapy of a tuberculous condition, therefore, constantly to keep in mind the pos-

sibility of the development of resistance. If it does develop, and is an irreversible phenomenon streptomycin therapy in tuberculosis must be looked upon largely as a gun containing only one shot. We need to hold back and not use streptomycin prematurely or unwisely. We probably have few opportunities (possibly only one in the majority of cases) to use it in the treatment of tuberculosis, and we must keep this fact in mind when contemplating streptomycin therapy.

In closing, may I again express appreciation of the opportunity to hear and to discuss Dr. Barron's excellent presentation, not only of his two cases of tuberculosis peritonitis so well treated, but of his treatment of the problem of streptomycin therapy in tuberculosis, as a whole.

Dr. Russell H. Frost: I am grateful for the opportunity of attending this meeting and of discussing briefly Dr. Barron's most interesting and effective presentation. As a matter of fact, not a great deal in the way of discussion is possible, for the reason that Dr. Barron's own experience in treating two cases of tuberculous peritonitis with streptomycin is probably more extensive than that of most of us here.

Until the advent of streptomycin, the treatment of this condition was far from satisfactory in spite of the fact that many cases—particularly of the so-called serofibrinous type in their earlier stages—did respond slowly to prolonged bed rest and eventually made more or less complete recoveries. In too many others, masses developed which became caseous, sometimes with the formation of abscesses and fistulas or sinuses, and occasionally with the development of intestinal obstruction. Dissemination of the tuberculous process, leading to death, occurred not infrequently.

While it is much too early, of course, to say that streptomycin has solved the problem of the treatment of tuberculous peritonitis—or of any other type of tuberculous disease—there can be no doubt that in the relatively early cases in which marked tissue changes have not yet developed—and I have seen two such cases and know of some eight or nine others—we have in streptomycin a drug which frequently or even usually produces a startling and dramatic improvement in both the patient's local and general condition, sometimes within a few days. No case, to my knowledge, has been followed long enough to be certain that the process has been permanently arrested. As one bit of evidence, I know of two individuals who had peritoneal biopsies both before and after streptomycin therapy, the initial biopsy revealing unquestioned widespread tuberculosis, and the posttreatment biopsy a normal peritoneum, both grossly and microscopically. On the other side of the coin there is the patient with tuberculous peritonitis who developed tuberculous meningitis and who was treated with streptomycin by Hinshaw in 1946, with apparent control of both processes. This patient recently returned to the Minneapolis Veterans Administration Hospital with a large, firm, nontender mass (the size of an orange) in the right side of his abdomen. This was felt to be a tuberculous mass (rolled-up omentum?) by all who saw him. This mass "pointed" and appeared to be about to open and drain spontaneously through the anterior abdominal wall when, gradually and without treatment of any kind, the process reversed itself and the mass disappeared over a six- to eight-week period. In for a check-up last week, the patient had an apparently normal belly and seemed to be perfectly well. Both he and Dr. Barron's cases should be interesting and instructive to follow.

My congratulations to Dr. Barron for his splendid report.

Dr. Ralph Creighton then read his inaugural thesis on "Military Medicine Needs the Medical Profession."

MILITARY MEDICINE NEEDS THE MEDICAL PROFESSION

RALPH CREIGHTON, M.D.

Minneapolis, Minnesota

This may appear to be an odd subject on which to base a thesis for a scientific group; yet it is a medical subject because it deals with medical men and their efforts to render medical service. I believe it is a timely and important subject, particularly now when our world is in a state of jealous ferment. This paper is about doctors, like you and me, who are suddenly transferred to a strange environment, at a time of great emotional strain. Here they are called upon to perform many unusual duties in addition to, or in place of, the familiar one of caring for sick or injured humanity. They are expected to perform these duties in the midst of great confusion, unsatisfactory conditions, many times while in great personal danger, and too many times to the accompaniment of caustic criticism from those who have made military medicine a profession and should know better.

I ask you to consider with me the situations faced by the temporary medical officer of the last war, and, in the light of his experiences, to see that it is important that you, the medical profession, should interest yourselves in the problems he faced. You must see the importance of lending your interest and influence to the end that the temporary medical officers of future wars shall be able to serve more efficiently and shall not be subject to some of the practices that greatly impaired their morale and efficiency in the national emergency just passed. By interesting yourselves in this reasonable criticism of the service, you can help the Surgeon General to develop a finer medical service in the event of a future sudden emergency. This is the time to study these problems and plan for the future. We hope that these plans may never be used, but just for once let us have our plans matured and firm before war is upon us, rather than throw them together hastily after war has struck. Let us gather together the knowledge gained by those who served last time and, with that as a basis, offer certain constructive criticism to the Surgeon General. I believe he would welcome the interested and forceful help of organized medicine. God forbid that we should enter another emergency making the same old mistakes over again; this method is said by some to be the approved army method.

Medical men who served in the last war were so hypercritical of the treatment accorded them in that war that a national committee has been appointed to consider their complaints with a view to improving their status in the event of another war. The American Medical Association sent a comprehensive questionnaire to all doctors who served in the forces. An analysis of this questionnaire has been made by Dr. Frank Dickinson, and the results of his analysis are most illuminating. I shall refer to them later. You have all heard strange tales of the misuse of medical men, of the waste

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Inaugural thesis.

of their professional skills, of discrimination and lack of promotions. You have heard that the services called for and absorbed far more medical men than they could use. We cannot be too critical of this, for the army was using the long view and, had the war continued, this pool of men would probably have been used.

As a direct result of this critical attitude of men who have served, insufficient numbers of doctors are joining the Medical Reserve Corps. The National Guard of Minnesota has recently been reactivated. They have been authorized to form a complete infantry division, including, of course, a medical battalion, air services, and certain other auxiliary services, among them anti-aircraft artillery. These units are well on their way to completion except for one factor. They have no medical service. At the present time only three or four doctors have taken commissions in these National Guard units. They are badly in need of medical officers of both company and field grade. This is a serious situation for the National Guard. I have tried to interest several younger men, calling attention to the added advantage of pay. None of the younger men are interested; certainly none who have been in service. Why? Certainly not because they are not willing to serve their country in time of emergency. Why are they not willing to help prepare for an emergency that we hope will never arise? Something unpleasant, deeply unpleasant, has soured our doctors on the services. The medical profession must find out what is wrong and why they feel that way. They must show the Surgeon General the reasons why doctors were dissatisfied with the service, and try to bring about certain changes in the army system.

I have been amazed at how little the civilian, including the medical profession, knows about the assignments that may be given to a doctor in the service. Usually they seem to picture him as carrying on his usual daily routine, the only change being a new environment and a uniform, as though he really had only started to do his work at a different hospital where all the patients were soldiers. People have looked at me with doubt and surprise when I have told them that I never served in a hospital, that all my service had been with troops. How could such things happen to a doctor? Did they really have doctors right with the soldiers? Weren't they all back somewhere in a hospital? The answer, of course, is that there were doctors like you and me who lived and served and went through combat with the line units; yes, and many of those doctors died with them. They served with the infantry, the artillery, the airborne forces, the paratroops, and the tanks. They had no hospitals and they did no hospital work, and, perforce, practiced a sort of educated backwoods primitive medicine and surgery. They were largely isolated from other medical men for periods of time. They had no medical books and, owing to the exigencies of the service, rarely got a medical journal. They went on and on in a monotonous oblivion of poor food and water, dirt, danger, and unending hours of caring for badly injured men. As time went on, they realized that the only relief they probably would ever get would be through the laws of attrition, and that rotation home or to a back area hospital service was a pleasant mirage —like promotion. They learned that once assigned to duty with a line unit, they would probably stay there for the duration. They did have the advantages of belonging to a unit that had considerable *esprit de corps* and had the pride of being a member of that unit. You may have noticed how proud men were of the shoulder patch they wore, and how they looked down on the man who wore the patch of a less spectacular unit. A doctor who served with the 82nd Airborne, or the 36th Division, was proud of his unit, in spite of all the troubles he had. That was the greatest satisfaction he had—he had been there!

May I quote a few items that I have taken from Dr. Dickinson's analysis of the AMA questionnaire?

1. 38.7 per cent of the medical officers in the army had been in general practice, 27.7 per cent were classified as specialists (17.6 per cent were board-certified), the remaining 33.6 per cent were interns or residents on induction to the service.

2. 48.7 per cent of the medical officers in the army never attained a rank higher than captain, and 79 per cent never attained a rank higher than major.

3. The average base pay of the temporary medical officers in our army was $2,826 a year.

4. 23.3 per cent of the doctors in the army served with tactical units.

Our civilian medical officer left with his division for a southern training camp, which he found to be in a God forsaken part of the country. It was partially completed and partially equipped—and alternately knee-deep in mud or baking in the dusty heat. He was now a regimental or battalion surgeon with the infantry or artillery. He found himself holding sick call, going on hikes, and living that healthful outdoor life. He taught first aid to his medical detachment, hoping some of them would be bright enough to remember part of it should the need ever arise. For some reason or other, the personnel section of the army would send all the bright boys to the artillery, engineers or infantry, and figure the dubs were good enough for the medical corps. He trained his men in map reading, in orienting themselves at night, in caring for themselves and their equipment, and how to care for and evacuate wounded under any and all conditions. He went on endless maneuvers. He inspected an endless number of latrines, mess halls, quarters, feet and genitals. To his surprise, he also discovered that the line officers with whom he was in daily contact did not think he or his medical detachment were of any great importance—a nuisance, rather. Later they would change their minds—but no one knew that yet! He also would receive unexpected calls from the regular army medical officers, who would inspect him, his detachment, and his knowledge of things military. Few of them ever seemed to want to help him with his new job, rather, they would make caustic complaints about his ignorance of the army and hope that some time these new officers would learn how to do things right. Never an effort on their part to sit down with a fellow doctor and say, "Here I am, a regular, and know

how to do these things; and I have come over to show you how so we will have a better medical corps." No, never that! These occasional visits became nightmares at times. Suddenly came the news of Pearl Harbor, and a few weeks later our doctor was on the way overseas, still struggling to become an army officer and to do his job the way the army seemed to want it done.

The commanding officer of a line organization is solely responsible for everything that his unit needs or does. He and not the medical officer is responsible for the health of the command. There are sound tactical and administrative reasons for this apparent anomaly. The well-trained line officer will usually let his medical officer run his own show without interference, but there are exceptions in line officers in this respect. The medical officer has certain prescribed duties detailed in army regulations. In addition, he is expected to advise his commanding officer in matters pertaining to the health of the command. This advice may be accepted in part or in total, or may be ignored, for the commanding officer is the party responsible for the results. He may, of course, be condemned by higher authority for not following the advice of his medical officer. So, a medical officer may make an inspection and find many things wrong which may affect the health of the command, but without the backing of his commanding officer, he lacks power of command to force delinquents to comply with regulations. The commanding officer may be intelligent, co-operative, and deeply interested in the health of his command—and most of them were. On the other hand, he may be stubborn, stiff-necked and hard-boiled, glorying in making things tough for himself and his men, he may even be a Christian Scientist or other cultist. I have heard some of these men deny the possible existence of psychosomatic conditions, deny that men may crack up under long days of combat, fatigue, and poor food. He doesn't think battle fatigue exists. He classifies all such cases as "yellow bellies," and wants them all tried by court martial. Even the most patient medical officer of any level—from regiment up to corps or army—may want to throw in his hand if he has a C. O. of this type.

I do not want to give the impression that all line officers were un-co-operative with medical officers. Most of them were grand chaps who thought their surgeon was the best ever and were completely with him in all he tried to do. I do feel, however, they could have been given a better understanding of the importance of a medical opinion. After all, a doctor is a pretty well educated man and smart enough not to underestimate the importance of the tactical situation or the theory of chain of command. I still believe the West Point graduate was the worst offender. Most of the reserve officers and Guard officers had had a family doctor back home whom they always had considered as being a pretty smart man, an important man in their community, a man whose opinion was worth considering. The West Pointer is well trained, pleasant, affable usually, and knows all there is to know about everything. He has a rather cavalier attitude towards the medical man, treats him like a harmless and rather simple child who could not possibly understand the profound thoughts of a military mind. I believe this attitude starts on the highest levels in the war department and is practiced on the Surgeon General just as much as a regimental or battalion commander may practice it on his surgeon.

Getting a replacement medical officer for duty with a combat unit was a major operation, and here was where we began to see where medical personnel were wasted. There were always plenty of medical officers in the replacement depots of the base sections doing nonmedical duties and anxious for a permanent assignment to duty, even as a medical officer in a combat outfit. By some quirk of army administration, it was very hard to pry these men out of the base section replacement depots. When at last they came to us, they told us strange stories of misuse of medical officers. They told us of large numbers of medical officers who remained in the replacement depots of the base sections in North Africa and the Peninsular Base Section in Italy, who were unassigned. They were doing military police duty. They were roaming the streets of Naples, checking to see whether combat troops sent back to the rest areas were wearing their dog tags, or watching to see that they saluted base section officers with the proper snap. They were even learning how to take down and re-assemble a machine gun while blindfolded. Their time was occupied by these and other WPA projects. Base section commanders liked to carry a large roster and were loath to part with these men even if they couldn't put them to proper use. The answer? Once again, a personnel policy in the Surgeon General's department that would see that proper use was made of medical personnel. The medical profession, with its organization, could help correct this abuse.

Military training is a wide gap that the newly inducted medical officer must face. If he were properly briefed by the service on entrance, he would realize its importance to him and to the men with whom he must serve. Proper and adequate orientation on the objectives of training would have produced far-reaching beneficial results. I feel that the regular army fell down badly on this opportunity. Let's make sure that opportunity is not missed next time. Military training should be the process by which a civilian doctor is transformed into an officer of the Army of the United States; a medical officer, it is true, but still an officer with certain duties and responsibilities by virtue of that fact. A doctor cannot enter the army and remain just a doctor; by reason of his rank he must assume another status as well. This transition from civilian doctor to army officer is hard for many to take and causes much unhappiness and misunderstanding. There are many who refuse to accept the officer responsibility but who are willing to accept officer privilege; in fact, they are very jealous of it. Of all the professions, the doctor is perhaps the greatest individualist. It is difficult to convert him to regimentation; and regimentation is very necessary in a military organization. This hostility toward accepting officer responsibility on the part of temporary medical officers was the source of much impatience and criticism from the officers of the regular army. They failed to understand that a newcomer couldn't grasp, on a minute's notice, certain obligations

in which they had had a lifetime of training. Their failure to understand this situation gave them, the regulars, a feeling of frustration and they tended to take it out on the newcomers. As a result, many of them offered training the hard way. A proper orientation course by the regular army, on induction, offered with patience and understanding, would have been gratefully received by these neophytes. All they wanted to know, to start with, was what was expected of them. Do you remember how you felt the first time you appeared on the ward as a very junior intern?

Many of these freshmen medical officers bitterly objected to field training under simulated battle conditions. "What a silly thing to make doctors go through," said they. Later they had cause to wish they had given more effort to learning field duties. There were some unregenerates who never would conform. They should have been reclassified then, for their own good and for the good of enlisted men who later had to serve with them, for many of these enlisted men were contaminated with the same ideas of nonconformism. For the most part, the new medical officer was an earnest soul, an eager beaver, anxious to do a good job if only some one who knew would tell him what that job consisted of in all its parts, and in terms he was familiar with. Like a true scientist, he wanted to know "why" the army did things the way they did, and not just accept them without question. This attitude the regular army instructors did not try to understand. As to why the army did some of the things the way they did, as yet there has been no answer.

I would further offer a criticism of the regular army in the type of training offered and in its selection of officers to conduct that training. In the event of another national emergency, they will do well to select teachers who are not so removed from the professional plane, who have understanding and a true willingness to help convert the doctor into an army officer. We saw too much of the impatient, supercilious, hypercritical type. At times I had the feeling that the regular army officer viewed the new temporary officer through the warped screen of a subconscious inferiority complex. He saw the well-trained, successful medical practitioner that he might have been had he not entered the army. As a result, I believe some of them took their resentment out in making the inexperienced officer ridiculous. This pose affected by many of the regular service was most bitterly resented, and it was a common practice not only in training but afterwards. It was after a session with one of these martinets that we would wonder: why hasn't the medical profession let its interest and well-wishes follow us into service and help control some of these military morons?

It is my contention that all medical officers should have basic field training, regardless of grade and probable future assignment. No one in the service knows what the future may bring in the way of duty. Unless changes are made in the assignment of personnel, no matter how well a doctor is trained, no matter what his age or physical condition, he may wind up with combat troops. Then he has only regrets that he had no field training. This happened to many whose age and professional attainments should have placed them elsewhere. A medic assigned to a combat outfit has a tough time at best, but a much worse time if he is not trained for it.

During the early rough days in Northern Africa, a replacement medical officer reported for duty. His only duty had been in a state-side station hospital, and he had requested overseas duty. He had never had service with troops and had no field training. It was necessary to send him up as a battalion surgeon to an infantry regiment that was heavily engaged. He admitted he had no idea of what his duties would be and no idea of the organization of an infantry medical detachment. He was plunged at once into heavy fighting at a time when the Germans had first started to use their 88's to good advantage. This man took one look at his new assignment, crawled into a foxhole and stayed there for the next forty-eight hours. He was relieved of duty, charged with misbehavior in the face of the enemy, and sent back in disgrace. Was he really a coward, or was he the victim of lack of training and experience? Was he to blame, or was some one else to blame?

The training offered to new medical officers at the Medical Department Field Training School at Carlisle Barracks was at times impractical, inadequate and unrealistic. It was often conducted by men who had little or no practical field experience in the things they taught. Few on the faculty had extensive combat or field background. Many of their graduates had to be completely "untaught" the things they had learned at Carlisle. This was particularly true of field sanitation. We found that modern warfare presented new problems in field sanitation that were not answered in the field manuals, but Carlisle stuck to the field manuals. The teaching of army paper work was uninspired and made drudgery. It *was* drudgery, and could have been simplified for field purposes. This was contemplated, but never quite done. However, no apparent effort was made to explain to these men the importance of the various documents, voluminous and repetitious as they were. As a result, men came overseas with a disrespect for the records they were required to make. On these records depended many statistics of importance, and many records that would, in later years, be the basis for claims against the government.

To touch again on the attitude of the regular army instructor toward the trainees at Carlisle Barracks, this I have heard from the instructors themselves, and I have heard them laugh about it; It was an attitude of "be tough, be arbitrary, make them feel ridiculous, make them 'take it and like it'." Some of them felt it was good technique to haze these trainees for all the world as though they were college freshmen. Now these trainees were doctors like yourselves. Would you have liked it? Would you have resented it? These trainees came to the school to be taught how to do a job by men who presumably knew how. What was still more unfortunate, some of these trainees later aped their instructors, and they themselves became the obnoxious, difficult type of officer you read about later in the newspapers.

The status of the medical officer in relation to the line officer should be overhauled and clarified in the future. I believe this should be done from the Surgeon

General's office right down to the lowest echelon that rates a medical officer. I believe the Surgeon General has had as much trouble putting his ideas across as the battalion surgeon, because of the all-wise line officer or the even wiser supply officer or G-4. It is only a difference of level. Also, the surgeon is generally outranked and has no command function.

Once again let me reiterate, I have no quarrel with the army system of chain of command, nor with the fixing of responsibility on commanding officers of all ranks. These systems are well tried, are practical, and necessary to a unified and smooth working military unit.

I firmly believe that a strengthening of the status of the medical officers of all grades in their relationship to line officers would improve morale and increase the efficiency of the Medical Department. The medic does not enjoy being treated like a step-child. Organized medicine could help considerably in raising the status of the medical officer as an important, intelligent, and trained part of the army. It could help immeasurably by interesting itself in the problems of organization and training faced by the Surgeon General—not by finding fault with his department but by backing him up as an important and honored member of our profession. We should make every effort to include medical officers in our meetings. As a profession, we must take an active interest and actively support the medical service of our armed forces. Rank, pay, and promotion enter the picture, too, in strengthening the status of the medical officer. Considering his attainments, educational background, professional ability and standing in his community, the medical officer is the most underpaid, underranked, and underprivileged officer in the service. He has much to give, but at times has a hard time giving it.

We, as a professional group, can also give aid to the Surgeon General in establishing a satisfactory personnel policy. Our own navy had a better one; so did the British. The army personnel policy, if they ever had one, never seemed to be workable or understandable. It also had a way of being diluted and modified as it passed through successively lower echelons from the Pentagon Building down. Certainly it could be and often was manipulated for personal considerations. There are enough former medical officers in the AMA at the present time who have enough military background and interest to help the Surgeon General in formulating personnel policies that would be fair, workable, and considerate. A policy that would see that duty assignments were made commensurate with age, experience, training and physical condition. The policy could set up a workable arrangement by which medical officers could be rotated within the service, between field service and hospital installations. Men should not be required to serve out the duration in combat units while they gradually lose their professional skills. The policy should also work out a fair and workable plan for rotation home after a certain length of overseas service. In the last war, many men spent all their time in the states and apparently were quite certain, for some reason or other, that they were not going overseas. On my return home from overseas after nearly three years, I saw many hospitals where most of the staff had not been overseas, nor did they expect to go. They were living comfortably and safely with their families. A good personnel policy would equalize these duty assignments.

I fully and firmly believe that the Surgeon General's office would welcome the interested co-operation of the medical profession on these problems if properly approached. We are not trying merely to be critical or vindictive, but want to help build a forward-looking plan that will eliminate some of the ills of the past which undermined efficiency. We want to do this through organized medicine as a gesture of help to other members of the group who have a big and difficult job to do. Certainly we must be able to show to the Medical Department that a policy by which officers assigned to combat units were frozen was a poor policy. They stayed with their units and watched attrition slowly creep up on them. They had little opportunity to do much real medicine and practically no surgery, they had not the equipment to do much of either. Yet, on the skill, judgment, and devotion of these men of low rank, depended the crucial initial treatment and initial triage of casualties. They patched up the terribly wounded, treated their shock, and decided who could and who could not be moved. The satisfaction of follow-up care and definite treatment was denied them. All the time they knew that youngsters out of accelerated courses, with accelerated graduate training, were being given the coveted hospital duties—and promotions.

The Minnesota Academy of Medicine can materially help in correcting some of the defects in the medical department of the Army of the United States. Its members can interest themselves in the problems of the Surgeon General's office. They can encourage helpful co-operation with that office by the medical profession. The army and its reserve components are looking to the medical profession for medical officers; we can help those officers.

It is my considered opinion that certain features of the Medical Department need particular study and correction.

1. A personnel policy that applies equally to all without any flavor of favoritism or influence from subordinate echelons. A policy that will assure:

(a) Reasonable duty assignments, taking into consideration age, physical condition, experience, professional training and military training. Assignments made by a competent medical group.

(b) Rotation of medical officers from field to hospital duties. Also a policy of rotation after reasonable overseas duty to duty in the zone of the interior.

(c) Assurance that nonmedical duties be cut to a minimum. In this regard, however, I would concede that command duty, staff duty, and a reasonable amount of administrative duty are necessary and must be expected.

2. A proper indoctrination program whereby new medical officers are patiently oriented in what the army may reasonably expect of them. In the event of a national emergency, this could well be handled by a team of regular army officers and medical officers with

(Continued on Page 696)

"...pressure of the gravid uterus mechanically interferes..."

in pregnancy

"Constipation is the rule. The pressure of the gravid uterus mechanically interferes with the function of the small intestine and colon per se and also renders the act of defecation less efficient by its effect on the diaphragm, abdominal muscles and levator ani."

—Bockus, H. L.: Gastro-Enterology, Philadelphia, W. B. Saunders Company, 1946, vol. 3, p. 999.

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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 694)

previous army experience but who come from civilian status.

3. More consideration to the training offered new officers and to the men picked to give the training. I believe the professional training is well handled. More training is needed in military medicine and surgery. More basic training, service school training, tactical, administration, and army procedure training is desirable. Above all, this instruction should be given by better instructors—ones who have had actual experience.

4. Less waste of medical personnel. The next war will require more medical services on the home front, for the war will be brought to the civilians. It will be total war. Overstaffing must be carefully watched.

5. Some reorganization of field medical units so that they are in more fluid state and their components may be quickly shifted where needed.

6. A study of the system of promotion. Consideration of higher rank for medical officers commensurate with the duties required of them and the rank of other officers with whom they serve.

7. A consideration of the relationships between the medical officer and the line officer. Better co-operation would be possible if the line officers' attitude were improved.

Those of us who have served are proud of it and have no regrets. There is much that is fine in the service. Most of its plans and methods are sound and well thought out. Most of its personnel are the kind of people we liked. However, it was not as good as it might and should be. We want it to become better and we want to help in that improvement program. We ask you, as part of organized medicine, to lend this improvement program your interest and support to the end that the sick and wounded of another war may have the best possible chance to be brought back to health.

Discussion

DR. HAROLD DIEHL: Dr. Creighton's discussion is very opportune. We have just finished a World War which we would all like to forget, but the world situation obviously makes it impossible to do that. Certainly the analysis Dr. Creighton has made of the status of the medical officer of the army is thoughtful and constructive. Dr. McCarthy and others here could give similar discussions on the basis of their experiences in the navy. Certainly too, Dr. Creighton has an exceptional background for the discussion he has given. He and I served in Base Hospital 26 in France during World War I, and during World War II he served for five years as a medical officer with combat units.

After the end of the recent war, the AMA authorized the establishment of a committee to study the experiences of medical officers and the utilization of medical personnel during World War II. I happened to be a member of that committee. It was that committee that formulated and arranged for the distribution and analysis of the questionnaire by Dr. Dickenson. In these studies we had the closest co-operation of the Surgeons General of the army and navy. A report was made to the House of Delegates of the AMA at its meeting in Atlantic City last June. The first recommendation of this committee was that the Surgeons General of the army and navy be given rank and authority commensurate with their responsibilities. Dr. Creighton is correct; the office of the Surgeon General had no control of the personnel in the various theaters to which Dr. Creighton refers.

In the army organization the Surgeon General was responsible not to the general staff but to General Sommerville of the Service of Supply. In the navy the Surgeon General was more closely related to the high command. In our judgment the Medical Departments of the armed forces should be advisory to the highest echelons in planning military activities and service. There has been some change made in the organization of the army, and the status of the Surgeon General has been improved over to what it was in the last war.

I am convinced that the Surgeons General of the army and navy are just as interested as are you and I in getting the finest officers in the army and navy and in offering the sort of service that will attract the highest type of men. Dr. Creighton mentioned that if there is another war the casualties among the military personnel will be small in relation to those among the civilian population. Our country has been fortunate in that our cities have not been touched in either World War I or World War II. What happened to Germany and Japan is evidence of what modern warfare can do to the civilian population. Goering and Hitler made no preparation for the care of civilians. Under strategic bombing, medical services broke down completely and there was terrific and unnecessary loss of life. If there is another war, we can expect that same thing in our own country. In another war it would be catastrophic to have one-third of the medical men taken into the armed forces. They just cannot withdraw such large numbers of doctors from the civilian population.

Plans must be made as to what to do if these possibilities become realities. It is difficult in peacetime to take these things seriously and do the sort of planning that is absolutely essential if we are to survive in a third World War. The AMA at Atlantic City authorized the establishment of a permanent and continuing Council of the AMA on National Emergency Medical Service. I was appointed a member of that Council. It is studying these things which Dr. Creighton has mentioned. One thing that concerns all of us is the time, effort and thought that needs to be given to it and the important part that medical societies will have to play to get these things done. Discussions such as Dr. Creighton's are helpful in pointing out the job that the medical profession has to do.

The meeting was adjourned.

A. E. CARDLE, M.D., *Secretary*

AERO MEDICAL ASSOCIATION MEETS

Aviation medical experts and scientists from many parts of the world gathered in Toronto, Canada, June 16, 17, and 18 for the first meeting of the Aero Medical Association convention in Canada. Under the leadership of Dr. J. W. Tice of Hamilton, president of the association, aero-medical men discussed the latest developments in aviation medicine, in an effort to make flying safer and more comfortable.

Topics discussed at the convention were: visual standards, decompression sickness, air sickness, aircrew selection, sonics and vibration, night vision, the human factor in aircraft design, physical examination for private flying, survival, color vision, hearing standards, acceleration, personal equipment, anoxia and oxygen equipment.

Representatives were present from Mexico, Brazil, Chile, Norway, Sweden, South Africa, Australia, Holland, France, the United States and Canada.



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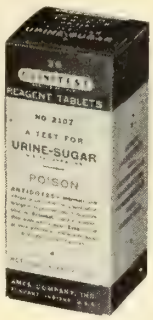
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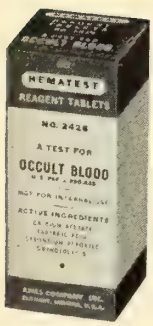
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In Memoriam

DONALD GREY COLP

Dr. Donald G. Colp of Robbinsdale, Minnesota, died April 14, 1948, at the age of seventy-eight. Taken ill last September in Brazil, he was flown back to the Mayo clinic and was ill several months preceding his death.

Dr. Colp was born at St. Margaret's Bay, Nova Scotia, June 25, 1869. He studied at Carleton College and graduated from the Yale Divinity School in 1897. Later in 1908 he obtained a medical degree from the Minneapolis College of Physicians and Surgeons.

In October, 1900, Dr. Colp married Mabel Adams of Minneapolis. She died in January, 1929.

On July 3, 1931, he married the Countess Utta Larisch-Moennich of Bavaria, whom he had met in Vienna. He is survived by his wife, two sons, Dr. Edward A. and Donald Grey, both of Robbinsdale, and two daughters, Mrs. Robert D. Chellis of Boston and Mrs. Donald G. Burch of Saint Paul.

HARRY WILLARD KLINE

Dr. Harry W. Kline of Anoka, died suddenly March 17, 1948, while celebrating the eightieth birthday of his mother.

Dr. Kline was born November 12, 1894, at Anoka, the son of Dr. and Mrs. James Kline. He graduated from the Hahnemann Medical School of Chicago in 1918 and then joined his father at the Kline Sanatorium in Anoka.

In 1919, Dr. Kline married Lucella Morrison of Saint Paul, who survives him.

HJALMAR ERWIN MORTENSBAK

Dr. H. E. Mortensbak, formerly of Hanska and New Ulm, Minnesota, died April 10, 1948.

He was born in Wood Lake Township, August 19, 1910, and was graduated from the University of Minnesota Medical School in 1935. After serving an internship at the Minneapolis General Hospital he located at Hanska. He practiced at New Ulm from 1944 to 1946, when he moved to Great Falls, Montana.

On June 3, 1939, Dr. Mortensbak married Muriel Swihart of Balaton who, with four children, survive him.

He was a member of the Redwood-Brown County Medical Society, the Minnesota State and American Medical Associations.

RUSSELL R. NOICE

Dr. R. R. Noice of Minneapolis died in Miami, Arizona, on April 15, 1948.

Dr. Noice was a graduate of North High School, Minneapolis, and obtained his medical degree from the University of Minnesota Medical School in 1915.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

Dr. Noice is survived by his wife, Gladys, a sister Mrs. Marvin Wickham of Minneapolis and a brother, W. C. Noice of Lisbon, North Dakota.

WOMAN'S AUXILIARY

Nicollet-Le Sueur

The Auxiliary of the Nicollet-Le Sueur Medical Society held a tea, Wednesday, April 14, at Rundstrom Hall on the Gustavus Adolphus Campus, St. Peter. Dr. Robert N. Barr, of Minneapolis, guest speaker, gave an informative talk on "Cancer." Members as well as the public were invited. At the same meeting high school and college girls were invited to hear a talk given by several county nurses, the college nurse and the public school nurse on the shortage of nurses and the need for recruitment of girls for the nursing profession.

Southwestern Minnesota

At the April 12 meeting of the Southwestern Minnesota County Auxiliary, Dr. Reynold Jensen, assistant professor of Child Psychology of the University of Minnesota, gave a talk.

On April 25, Auxiliary members and doctors met for a joint meeting. Speakers at this meeting were Mr. M. F. Brist, attorney for the State Medical Association; Arthur M. Calvin, executive of the Minnesota Hospital Association, spoke on behalf of the "Blue Cross," and acting as director of Minnesota Medical Service, told of the progress of "Blue Shield," giving a full explanation of the setup of the two groups.

DOLLARS AND CENTS — AND CANCER

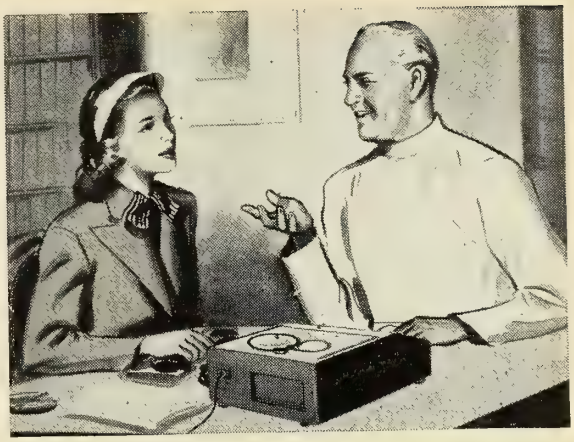
The American Cancer Society advances the argument that strictly on a dollars-and-cents basis—the least of the costs of cancer—it is good business to finance research for a cure for the disease.

The ACS points out that the price of cancer to this nation runs as high as $2 billion a year—a staggering sum. This includes estimates of medical fees, hospital charges and even cemetery plots and headstones for those who die before their time. It does not include some important intangibles, however—like the full value of the wage-earner to his family, the damage done a home by the loss of a wife and mother, the future worth of a child to his family, community and nation. The dollars-and-cents yardstick cannot measure the pain of cancer patients, the heartaches of their families and the great concern that all of us feel while cancer is around to menace us. These costs are not borne by a few. For every two homes in America there is one cancer death.

Cancer's toll of two billion dollars a year means a contribution of $14 for every man, woman and child in the United States.

In our efforts to find the cause and cure, the nation has made little more than a token effort. Government financing of research and services has risen only recently from $1.5 to $14 million a year. The American Cancer Society, has spent up to $12 million a year. Total these public expenditures, and the answer is $26 million—an annual expenditure of 18 cents per person for research, clinics, detection centers, public education and services to the cancer sick.

Each of us pays $14 a year in involuntary tribute to cancer; but to eradicate the disease, to end the incidental human suffering and to prevent the premature loss of services of the 188,000 people who die of cancer each year our individual effort amounts to 18 cents.—*ACS News Service*, January, 1948.



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Reports and Announcements

AMERICAN COLLEGE OF SURGEONS

The thirty-fourth clinical congress of the American College of Surgeons will be held in Los Angeles, California, with headquarters at the Biltmore Hotel, from October 18 to 22. The program of scientific sessions will be supplemented by operative clinics in hospitals in Los Angeles and vicinity, by showings of operations by television and motion pictures, and by a four-day hospital standardization conference for hospital personnel. There will also be extensive technical and scientific exhibits.

At the convocation which will be held on the final evening of the meeting, approximately 600 initiates will be received into fellowship. The American College of Surgeons now has a total fellowship of more than 15,000 surgeons, including those not in the United States.

SOCIETY OF AMERICAN BACTERIOLOGISTS

The forty-eighth annual convention of the Society of American Bacteriologists was held in Minneapolis, May 10 through 14, attended by 1,200 scientists from the United States and Canada. Meetings were open to all persons interested in bacteriology.

The society's annual lecture, the Oswald T. Avery Lecture, was delivered on May 13 by Dr. Rene Dubos of the Rockefeller Institute for Medical Research.

AMERICAN CONGRESS OF PHYSICAL MEDICINE

The twenty-sixth annual scientific and clinical session of the American Congress of Physical Medicine will be held September 7 through 11 at the Hotel Statler, Washington, D. C. All sessions will be open to members of the medical profession in good standing with AMA.

In addition to scientific sessions, instruction courses will be offered in two groups. One set of ten lectures will be based primarily on physics and physiology, and attendance will be limited to physicians. The other set of ten lectures will be more general in character and will be open to all physicians and to physical therapists who are registered with the American Registry of Physical Therapy Technicians. Full information may be obtained from the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

CHICAGO OPHTHALMOLOGICAL SOCIETY

The Chicago Ophthalmological Society announces that its second annual clinical conference will be held November 29 to December 4. Special attention will be paid to the pathologic and clinical aspects of glaucoma and retinal diseases. Recent advances in general ophthalmic therapeutics also will be presented. The class will be limited to fifty. Further information may be

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MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The Minnesota Society of Neurology and Psychiatry met in St. Mary's Hospital in Rochester on May 29. The one-day session began with surgical clinics held by the neurosurgical staff in the operating rooms of the hospital. During the remainder of the morning, papers were presented by Dr. K. B. Corbin and Dr. F. J. Millen, Dr. A. R. MacLean and Dr. R. G. Bickford, Dr. J. G. Love, and Dr. H. P. Rome, all of Rochester. Following a luncheon in the Mayo Foundation House, an address entitled "The Art of the Lapidary" was presented by Glen M. Waters.

RED RIVER VALLEY ASSOCIATION

Twenty-five physicians, many of them accompanied by their wives, attended a dinner meeting of the Red River Valley Medical Association in Crookston on April 30. Following the dinner a motion picture on child behavior problems was shown and discussed.

Principal speaker of the evening was Dr. C. O. Erickson, Minneapolis, who spoke on electroshock therapy in psychiatric disorders. Plans were made to hold the next meeting of the organization on July 23 in Thief River Falls.

WASHINGTON COUNTY SOCIETY

The Washington County Medical Society held a previously postponed meeting at Forest Lake on May 11. Only three members were absent. The meeting was devoted to a presentation of the Minnesota Medical Service plan by Mr. Beise and Mr. Calvin.

The immunization project in the county schools was reported to have been completed on April 9.

STEARNS-BENTON COUNTY SOCIETY

Principal speaker at the regular monthly dinner meeting of the Stearns-Benton County Medical Society in St. Cloud on May 20 was Dr. Charles Rea, Saint Paul. Dr. Rea, an instructor in surgery at the University of Minnesota Medical School, spoke on "Intestinal Obstruction." Forty-five members of the society attended the meeting.

SOUTHWESTERN MINNESOTA SOCIETY

At the final meeting of the season, held in Worthington on May 24, members of the Southwestern Minnesota Medical Society heard a talk on "Endocrine Gland Preparations" by Dr. C. J. Ehrenberg, Minneapolis. An obstetrician, Dr. Ehrenberg is an associate clinical professor at the University of Minnesota Medical School.

Also on the program at the meeting was Dr. R. F. Pearson, Slayton, who reported on eight cases of trichinosis recently developing from one source of infection in his community.



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Of General Interest

In Waseca at a meeting of the city council on April 13, Dr. James F. Lynn was reappointed health officer for another term.

* * *

The Cleveland Dermatological Society has invited Dr. Henry E. Michelson, Minneapolis, to be the guest speaker at the twenty-fifth anniversary of the organization.

* * *

Dr. Myron O. Henry, Minneapolis, has been elected president of the American Academy of Orthopaedic Surgeons.

* * *

At the annual meeting of the American Gastroenterological Association in Atlantic City on May 1, Dr. J. Arnold Bargen, Rochester, was elected vice president of the organiaztion.

* * *

Dr. L. A. Brunsting, Rochester, was elected secretary of the American Dermatologic Association at a meeting of the organization recently held in Coronado, California.

* * *

Among Minnesota physicians attending the annual meeting of the American College of Physicians in San Francisco in April were the Thysell brothers, Dr. V. Duane Thysell of Hawley and Dr. Desmond M. Thysell of Minneapolis.

* * *

"Treatment of Chronic Alcoholism" was the title of a paper presented by Dr. Philip H. Heersema, Rochester, at the Minnesota Welfare Conference in Saint Paul on May 3.

* * *

Dr. Philip K. Arzt, Saint Paul, assistant clinical professor of neuropsychiatry at the University of Minnesota, was recently appointed senior consultant in electroencephalography at the University Medical School.

* * *

The oldest living former intern of St. Mary's Hospital in Minneapolis, Dr. W. H. Valentine of Tracy attended an alumni meeting of the hospital staff in Minneapolis on May 19.

* * *

Presentation of the *Minneapolis Star and Tribune* award for leadership in Minnesota was made to Dr. A. E. Cardle, Minneapolis, at the annual convention of the Minnesota State Medical Association in Minneapolis on June 9. The award was made in recognition of Dr. Cardle's accomplishments as president of the state medical society.

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At a meeting of the Lyon-Lincoln Counties Medical Society at Marshall on May 4, Dr. Raymond D. Pruitt, Rochester, spoke on "The Consideration of Certain Variations in the Anginal Syndrome."

* * *

Dr. H. F. Polley, Rochester, presented a paper entitled "Rheumatoid Arthritis; Its Diagnosis and Treatment" at a meeting of the Marshalltown Medical Society in Marshalltown, Iowa, early in May.

* * *

Hopkins will have a new medical clinic in the near future if the plans of Dr. A. C. Stahr materialize. At a council meeting in Hopkins on May 18, Dr. Stahr was granted a permit for the construction of a clinic on Eighth Avenue North.

* * *

While attending the annual clinic of the Medical Society of Ingham County in Lansing, Michigan, on April 29, Dr. L. P. Howell of Rochester presented a paper on "The Management of Goiters."

* * *

"Urologic Problems in Pediatrics" was the title of a talk presented by Dr. J. L. Emmett, Rochester, at a meeting of the Tri-County Medical Society in Mankato on April 29.

* * *

While participating in a round table conference of the American Cancer Society in Boston on April 12 and 13, Dr. Lewis B. Woolner, Rochester, discussed "Carcinoma Cells in Sputum and Bronchial Secretions."

One of the speakers at a meeting of the Interurban Academy of Medicine in Duluth on May 19 was Dr. Anderson C. Hilding, Duluth, who spoke on "The Fenestration Opening: Indications and Results."

* * *

It was announced early in May that Dr. Martin E. Janssen of Saint Paul would join the staff of the Northwestern Clinic in Crookston late in June. Dr. Janssen is a specialist in internal medicine.

* * *

Four Tracy physicians, Dr. W. G. Workman, Dr. A. D. Hoidale, Dr. W. H. Valentine and Dr. O. J. Esser journeyed to Marshall on April 20 to attend a meeting of the Lyon-Lincoln Medical Society.

* * *

Early in May, Dr. E. G. Beckering of Edgerton flew his newly purchased Republic Seabee airplane to Worthington to qualify for his water rating in flights off Lake Okabena.

* * *

Dr. Erling S. Platou and Dr. Richard B. Tudor, Minneapolis, have announced the association of Dr. Allan J. Hill and Dr. Albert J. Schroeder in the practice of pediatrics.

* * *

Recently elected as members of the board of the Minneapolis Health Action Committee were Dr. Karl W. Anderson and Dr. Paul F. Dwan, both of Minneapolis. At the same time Dr. Hermina Hartig, Minneapolis, was re-elected for a three-year term on the board.

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Dr. William R. McClusky, a graduate of the University of Minnesota Medical School, has opened offices for the practice of medicine in Paynesville. Dr. McClusky served his internship at Minneapolis General Hospital.

* * *

Among the speakers at the fifteenth anniversary luncheon of the Catholic Women's Hospital Association, held in Minneapolis on May 17, were Dr. and Mrs. E. S. Mariette. Dr. Mariette is superintendent of the Glen Lake Sanatorium.

* * *

Among officers recently elected to head the Tuberculosis and Health Association of St. Louis County were Dr. G. A. Hedberg, Nopeming, vice president; Dr. R. P. Pearsall, Virginia, second vice president, and Dr. Mario Fischer, Duluth, treasurer.

* * *

The Associated Women of the American Farm Bureau Federation have donated $3,000 to establish a research fellowship for the study of the cause and control of poliomyelitis. The fund is to be known as the Mrs. Charles W. Sewell Memorial Fund.

* * *

Guest speaker at a meeting of the Kiwanis Club in Olivia on April 26 was Dr. F. W. Penhall of the Willmar State Hospital. Dr. Penhall spoke on the causes of heart disease and some of the means of prevention.

* * *

In International Falls on April 22, Dr. Arthur H. Wells, Duluth, president of the Minnesota Division of the American Cancer Society, addressed a public meeting, spoke to school groups and gave a radio talk in behalf of cancer fund campaign then being conducted.

* * *

It was announced on April 21 that Dr. H. R. Ransom, who had been practicing medicine in Osseo since leaving Crosby about two years previously, planned to return to Crosby to become associated in practice with Dr. James B. Nixon in the Cuyuna Range Clinic.

* * *

"The Role of Antihistaminic Drugs in the Treatment of Allergy" was the title of a paper presented by Dr. William S. Eisenstadt, Minneapolis, at the thirty-seventh semi-annual postgraduate extension course of the Lyon-Lincoln County Medical Society in Marshall on April 20.

* * *

A series of lectures were presented by Dr. W. B. Martin, Rochester, at a course in physical medicine at the Veterans Administration Hospital at Hines, Illinois, on May 3 and 4. Subjects for the lecture series were "Prescription Writing in Physical Medicine" and "Microwave Diathermy."

* * *

It was a triple celebration on April 30 for Dr. F. W. Mayer, Sr., of Saint Paul. The three events which were celebrated were his birthday, the forty-fifth anniversary of his graduation from the University of Maryland Medical School, and the completion of his thirty-ninth year in the practice of medicine in Saint Paul.

In Rochester, at the annual health day meeting of the Four-Counties Medical Society Auxiliary and the Altruistic Club, on April 21, Dr. Howard P. Rome, consultant in psychiatry at the Mayo Clinic, spoke on "Psychosomatic Medicine" and presented motion pictures to illustrate his lecture.

* * *

A spring chest clinic was held in Faribault on May 3 by Dr. Karl H. Pfuetze, superintendent of Mineral Springs Sanatorium. Dr. Pfuetze administered the Mantoux test to persons desiring it and also examined ex-patients of the sanatorium living in the area. On May 4 he conducted a similar chest clinic in Morristown.

* * *

More than 700 persons from Elbow Lake and the surrounding area paid tribute on April 18 to Dr. E. T. Reeve in an "appreciation celebration." Dr. Reeve has practiced in Elbow Lake and Grant County for forty-eight years, during which time he has delivered more than 2,000 babies.

* * *

Dr. Ralph T. Knight and Dr. Joe W. Baird, Minneapolis, announce the association of Dr. Stanley P. Wesolowski, Dr. Frederick H. Van Bergen and Dr. Ellis N. Cohen in the practice and teaching of anesthesiology, with headquarters at 412 Delaware Street S.E., Minneapolis.

* * *

Among Minneapolis physicians who attended the recent meeting of the American College of Physicians in San Francisco were Dr. O. L. Nelson, Dr. Wesley Spink, Dr. Cecil J. Watson, Dr. A. C. Kerkhof, Dr. H. O. Altnow, Dr. S. Marx White, Dr. George E. Fahr, Dr. Russell C. Lindgren and Dr. Clyde A. Undine.

* * *

During the month of May, immunization against diphtheria and smallpox was carried out in the schools of Stillwater by the local physicians. This completed the immunization of school children in the county for this year. Chairmen have been named to canvass the county for registration for the chest x-ray survey to be conducted in Stillwater from July 22 to September 30.

* * *

Dr. J. E. Jenson, formerly of Eau Claire, has been associated with Dr. J. W. Stuhr of Stillwater since June 1. A graduate of the University of Minnesota Medical School, Dr. Jenson was on the plastic surgery staff at Valley Forge General Hospital, Phoenixville, Pennsylvania, for two years during World War II. For the past year he practiced at Eau Claire.

* * *

A special meeting of the Southwestern Medical Society and Auxiliary was held on April 26 to discuss the Blue Shield plan. Speakers for the occasion were A. M. Calvin, executive director of the Minnesota Hospital Service Association and acting director of Minnesota Medical Service, Inc., and E. Manley Brist, attorney for the Minnesota State Medical Association.

* * *

One of the speakers at a gathering of Lake Minnetonka residents on May 7 to discuss lake pollution was Dr. W. W. Rieke, Orono township health officer, who



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* * *

Dr. Ernest M. Hammes, Jr., has become associated with his father in the practice of psychiatry and neurology with offices at 1124 Lowry Medical Arts Building, Saint Paul. Dr. Hammes, Jr., graduated from the Harvard Medical School in 1941, served in the army for five years, his last assignment being consultant in neurology to the First Army. For the past three years he has been a Fellow in neurology and psychiatry at the Mayo Foundation.

* * *

Dr. Robert A. Aldrich of Anoka, at present a senior resident physician at the University Hospitals in Minneapolis, has been awarded a year's fellowship for graduate study in pediatrics by the National Foundation for Infantile Paralysis. Dr. Aldrich served in the navy after graduating from Northwestern University Medical School in 1944.

* * *

Swanville lost a physician late in March when Dr. John Ylvisaker, who had been associated with Dr. E. J. Simons and Dr. E. G. Knight in Swanville for seven months, left for Minneapolis to practice in an office in the Medical Arts Building during April, May and June. Dr. Ylvisaker planned then to go to a hospital in Detroit, Michigan, to continue his medical practice.

* * *

In April, Dr. Bradley Kusske, son of Dr. A. L. Kusske of New Ulm, became associated in practice with Dr. Howard A. Vogel of New Ulm. A graduate of the University of Minnesota Medical School, Dr. Kusske was in military service for two years, then practiced for six months at Caledonia before joining Dr. Vogel.

* * *

In April it was announced by the Peterson-Lenont Clinic of Virginia that Dr. Robert Petey would soon open an office in Buhl for the practice of medicine. A graduate of Harvard, Dr. Petey interned at Ancker Hospital, Saint Paul, and at the University of Minnesota Hospitals. He served in the army for approximately three years.

* * *

Dr. Carl O. Rice has been elected president of the Minneapolis Surgical Society to succeed Dr. L. Haynes Fowler. Other officers are Dr. Edward A. Regnier, vice president; Dr. Hamlin A. Mattson, recorder; Dr. Rudolph E. Hultkrans, treasurer, and Dr. Ernest R. Anderson, secretary. Dr. W. R. Jones was chosen a member of the Council.

* * *

Announcement was made on April 26 by Dr. B. O. Mork, Jr., Worthington, that Dr. R. W. Robinett, who had been taking postgraduate work at the University of Minnesota Medical School, had joined the staff of the Worthington Clinic. Dr. Robinett, whose specialty is internal medicine, is a graduate of Western Reserve University, Cleveland, Ohio.

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Two Rochester physicians were on the program at a meeting of the Park Region District and County Medical Society at Fergus Falls late in April. Dr. D. O. Ferris presented a paper entitled "Treatment of Traumatic Injuries of the Genito-urinary System," while Dr. Roger L. J. Kennedy spoke on "Osseous Changes in Some Disease of Children."

* * *

Speaking at a health panel at the Labor Welfare Institute in Minneapolis on May 8, Dr. Clare Gates, assistant city health commissioner, said that the per capita tax expenditure for health in Minneapolis should be $1.50 instead of the 71 cents it was last year. One of the primary needs of the city, to be filled when additional funds are available, he said, is a maternal and child health program under the direction of the city health department.

* * *

At a meeting of the Medical Association of the State of Alabama at Mobile during the middle of April, Dr. Andrew B. Rivers, Rochester, gave a motion picture demonstration and presented a talk on "The Syndrome of Peptic Ulcer Perforating into the Pancreas." Later in the month he discussed the same subject at a meeting of the State Medical Association of Texas in Houston.

* * *

At the recent annual meeting of the American Association of Anatomists in Madison, Wisconsin, Dr. A. T. Rasmussen, professor of anatomy at the University of Minnesota, was elected to the position of vice president. University of Minnesota anatomists presented one-sixteenth of all the papers offered at the meeting, which was attended by representatives of ninety medical schools.

* * *

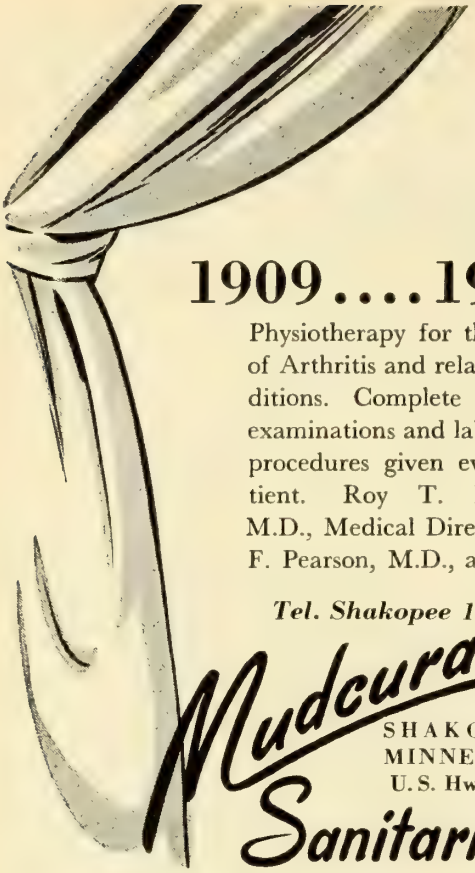
Dr. Jason K. Hartjen, formerly of Detroit, Michigan, has become associated in practice with Dr. D. H. Garlock and Dr. A. V. Garlock of Bemidji. Dr. Hartjen has conducted a surgical practice in Detroit and Grand Rapids, Michigan, at the Cornell Medical Center in New York, and at Tilton General Hospital in Trenton, New Jersey. During April of this year, before he became associated with the Bemidji physicians, he conducted the practice of Dr. D. H. Garlock while the latter was on a vacation.

* * *

On April 3, Dr. Arthur Felion left Two Harbors for Saint Paul to enter private practice with offices in the Lowry Medical Arts Building. Dr. Felion had been on the staff of the Community Health Center Hospital since February, 1947. Upon his departure for Saint Paul, he was replaced in Two Harbors by Dr. W. F. Nuessle, who plans to remain only until July 1 when he will begin a residency at Ancker Hospital in Saint Paul.

* * *

New staff member of the Bratrud Clinic in Thief River Falls is Dr. W. M. Feigal, a graduate of the University of Minnesota Medical School in 1943. After serving his internship at Minneapolis General Hospital, followed by a residency in urology at the same institution, Dr. Feigal spent two years in the army at Oliver



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Surgical Anatomy and Clinical Surgery, two weeks, starting July 6, August 16, September 27.
Surgery of Colon and Rectum, one week, starting June 14, September 20.
Surgical Pathology every two weeks.
UROLOGY—Intensive Course, two weeks, starting September 27.
Fractures and Traumatic Surgery—Intensive Course, two weeks, starting June 7, October 25.
OPHTHALMOLOGY—Intensive Course, two weeks, starting September 20.
Refraction Methods, four weeks, starting October 11.
Ocular Fundus Diseases, one week, starting June 7, November 15.
GYNECOLOGY—Intensive Course, two weeks, starting September 13.
Vaginal Approach To Pelvic Surgery, one week, starting September 27.
OBSTETRICS—Intensive Course, two weeks, starting June 21, September 27.
MEDICINE—Intensive Course, two weeks, starting October 11.
Personal Course In Gastroscopy, two weeks, starting June 28, July 12.
Electrocardiography and Heart Disease, two weeks, starting August 2.
DERMATOLOGY—Formal Course, two weeks, starting October 4.
Clinical Course every two weeks.
OTOLARYNGOLOGY—Intensive Course, two weeks, starting October 18.

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General Hospital in Augusta, Georgia, where he was chief of the urological section. He is serving as urologist with the Thief River Falls clinic.

* * *

The fourth annual John B. Johnston Lecture was delivered at the University of Minnesota on May 19 by Dr. David P. C. Lloyd, neurophysiologist at the Rockefeller Institute for Medical Research. His subject was "Monosynaptic Reflexes and the Myostatic Unit."

The annual John B. Johnston Lecture honors the memory of the former dean of the University's College of Science, Literature and the Arts, a noted neuro-anatomist and educational administrator, who died in 1939.

* * *

Dr. Philip S. Hench of the Mayo Clinic spoke on yellow fever before the International Congresses on Tropical Medicine on the occasion of the Walter Reed Memorial Celebration on May 12 in Washington, D. C. About 2,000 members and delegates assembled to celebrate the forty-eighth anniversary of the discovery by Dr. Walter Reed of the transmission of yellow fever by the mosquito. The gathering was attended by scientists, physicians and public officials from all over the world.

* * *

Alexandria physicians have paid tribute to the memory of the late Dr. Peter E. Kierland by installing two special children's beds in St. Luke's and Our Lady of Mercy Hospitals in that city. The beds, specially equipped for children up to twelve years of age, were purchased by donations from all Alexandria physicians, who wished to set up a memorial in accord with the late doctor's love for children. Dr. Kierland, who practiced medicine in Alexandria for twenty-five years, died in November, 1947.

* * *

It was announced on May 14 that Dr. F. C. Mann, Rochester, had resigned as a Mayo Clinic governor and as director of the Institute of Experimental Medicine. The reason given by Dr. Mann for his resignation was that administrative duties and responsibilities had been seriously interferring with work in his primary interest, research. The clinic board of governors announced that Dr. Mann would continue with his experimental investigations "with the fullest facilities and unhampered by administrative duties."

* * *

Principal speaker at a meeting of the Minnesota Academy of Ophthalmology and Otolaryngology, held in Rochester on May 14, was Dr. Hugo L. Bair of the Mayo Clinic whose topic was "Surgery of the Eye."

Approximately 100 physicians and their wives attended the meeting which was directed by Dr. T. R. Fritsche, New Ulm, president of the organization. Following evening dinner, motion pictures taken in the Canadian Rockies were shown by Dr. Malcolm C. Pfunder, Minneapolis.

* * *

On April 22, Dr. Mario Fischer, Duluth health director, was asked by a city-county committee to proceed with a fact-finding analysis of plans to develop a county-wide health service in St. Louis County. Such a health

service would supplant the many individual health departments now existing throughout the county. In regard to the proposed plan, Dr. Fischer stated that a combined public health unit undoubtedly would save money, improve service and provide service to rural areas not receiving it.

* * *

Purchase of the Gamble Clinic in Albert Lea by Dr. Clayton E. J. Nelson and Dr. E. S. Palmerton was announced on April 26. The medical establishment was purchased from the estate of the late Dr. J. Will and Dr. Paul M. Gamble, both of whom died in 1947.

Dr. Palmerton has been associated with the Gamble Clinic since 1940, except for two and one-half years which he spent in the army. Dr. Nelson joined the clinic staff in 1945 after his release from the army.

The name, Gamble Clinic, will continue to be used by the purchasers.

* * *

A request for a county public health nurse was rejected by Becker County commissioners at a meeting on May 5. The request had been made by the Clay-Becker Medical Society, of which Dr. R. R. Hendrickson of Sand Beach Sanatorium is secretary.

In a letter to the county commissioners Dr. Hendrickson pointed out that a nurse would be needed to help conduct a contemplated x-ray survey and that also there was great need for such a nurse on a permanent basis. Although no statement was made by the commissioners it was believed that the request was rejected as an economy move.

Eden Valley acquired a new physician early in May when Dr. Henry M. Broker, formerly of St. Cloud, opened offices for the practice of medicine. A graduate of the Marquette University School of Medicine, Dr. Broker interned at St. Joseph's Hospital in Milwaukee, Wisconsin. He then entered the navy, serving first at the U. S. Naval Hospital in Bainbridge, Maryland, at the University of Maryland Hospital and at Johns Hopkins Hospital, after which he was appointed to flight surgeon's training at Pensacola, Florida. As a flight surgeon he served in the Caribbean, the Pacific, the Aleutian and Alaskan theaters of operation.

* * *

New medical director of the Arrowhead Health Center, Inc., in Duluth, is Dr. Donald K. Freedman, formerly of White Plains, N. Y., whose appointment to the office was announced on April 17. Dr. Freedman, a graduate of Tufts College Medical School, has taken postgraduate work at the Yale University School of Medicine and at the Columbia University School of Public Health. He was in the U. S. Public Health Service for five years. In 1947, on a Rockefeller Foundation fellowship, he studied prepaid group medical practice plans in all parts of the country. He recently was medical director of a health and welfare plan in New York.

* * *

Tribute was paid to Dr. Robert L. Bowen, Hibbing, at Hospital Day ceremonies in Hibbing General Hospital on May 12.

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Physicians, nurses, civic leaders and hospital staff members assembled on the occasion to praise the work of Dr. Bowen and to unveil a life-sized portrait of him presented to the hospital by a group of friends. The ceremonies were in recognition of the efforts put forth by Dr. Bowen in instigating the construction of the hospital in 1922 and in bringing it under the supervision of the Sisters of St. Benedict in 1942. Principal speaker for the gathering was Dr. Edward Tuohy of Duluth, who directed the unveiling of the portrait.

A graduate of the University of Wisconsin in 1912, Dr. Bowen interned at Augustana Hospital in Chicago, and later became chief surgeon at Colon Hospital in Panama for two years. He then began his practice in Rood Hospital in Hibbing and at the Range Hospital in Buhl.

* * *

Among Minnesota physicians attending a three-day continuation course in cardiovascular diseases at the University of Minnesota, April 15 through 17, were Dr. Bernette G. Nelson, Menahga; Dr. L. A. Smith, Balaton; Dr. Roy T. Pearson, Shakopee; Dr. Richard N. Sather, Mora; Dr. Alfred S. Nelson, Thief River Falls; Dr. Walter Scott Neff, Virginia, and Dr. R. E. Carlson, Stillwater.

The course included discussions on rheumatic heart disease in children, diagnosis and treatment of acute coronary thrombosis, care of the obstetrical patient with heart disease, advances in the use of cardiac drugs, and diagnosis of congenital heart disease.

* * *

With the addition of two members, a medical group in Albert Lea incorporated early in May under the name Medical Arts Clinic.

Joining Dr. D. S. Branham, Dr. S. A. Whitson and Dr. J. P. Person, all of Albert Lea, were Dr. Theodore Hansen and Dr. Ruben F. Schmidt. Dr. Hansen, a graduate of the Nebraska College of Medicine, has been associated with Drs. Branham, Whitson and Person since June, 1946, maintaining an office in Alden. Dr. Schmidt, a graduate of the Wisconsin College of Medicine in 1943, interned at St. Luke's Hospital in Duluth. He is taking over the practice vacated in Alden by Dr. Hansen.

* * *

After practicing in Benson for forty-eight years, Dr. Oscar Daignault sold his practice on April 28 to Dr. Richard P. Griffin, who had been sharing his office since September, 1947.

Dr. Daignault, a graduate of Montreal Medical School in Canada, came to Minnesota shortly after graduation and practiced for a short time in Saint Paul, Dayton and Hancock. He began practice in Benson in April, 1900. In addition to the duties of his practice, he has served as city and county health officer and as coroner.

Dr. Griffin, who purchased the practice, graduated from the University of Iowa Medical School in 1944 and interned at Santa Rosa Hospital in San Antonio, Texas. After serving in the navy for a period, he became associated with Dr. C. I. Oliver at Graceville prior to moving to Benson in the fall of 1947.



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Forty physicians gathered in St. Cloud on May 6 for the annual medical conference of the Central Minnesota Chapter of the American Academy of General Practice.

During the day scientific sessions were held, followed by a dinner and a business meeting. Principal speaker at the dinner was Dr. Otto A. Lenz, Minneapolis, who discussed the merger of the American College of Physicians and Surgeons with the American Academy of General Practice.

In attendance at the meeting was Dr. Charles E. Donaldson, Foley, state president of the academy. Dr. A. M. Watson, Royalton, is president of the area chapter.

Among physicians presenting talks and demonstrations at the scientific sessions were Dr. Robert Peterson, Dr. H. B. Clark, Dr. E. V. Wetzel, Dr. L. M. Evans, Dr. James E. Murphy, and Dr. James O'Keefe, all of St. Cloud; Dr. William Hall and Dr. S. Raetz, both of Maple Lake; Dr. F. Baumgartner, Albany; Dr. E. J. Schmitz, Holdingford, and Dr. A. J. Lenarz, Long Prairie.

* * *

At the age of eighty-five, Dr. Alvah W. Jones, Red Wing, resigned as city health officer on May 4 after twenty-one years of service, to complete his retirement from the medical field. He plans to devote his future to literary pursuits.

About six years ago, Dr. Jones retired from an active medical practice, concluding duties that began in 1894 when he moved to Red Wing to take over the practice of his uncle, Dr. Philo Jones. Long before 1894, however, he taught and worked in the wilderness of northern Minnesota, serving part of the time as a member of state geological and geographical survey groups. He was the first school teacher at Tower and later taught at the Norwegian Hauge Seminary there. Moving to the East, he enrolled at George Washington University where he received his medical degree. He then practiced for two years in Washington, D. C., before moving to Red Wing on the invitation of his uncle.

During his years in Red Wing, Dr. Jones has served on the board of education for fifteen years, as president of it for three years. He was official physician at the Red Wing State Training School for nearly eight years. His May 4 resignation ended twenty-one years as city health officer.

* * *

HOSPITAL NEWS

The board of directors of the new municipal hospital in Granite Falls announced on April 26 that the operating and maintenance staff for the hospital was complete except for three registered nurses. It was hoped that the three nurses could be obtained before the scheduled opening date of the hospital on June 1. Superintendent of the new hospital is Ellen Phillips, formerly of Worthington, who was superintendent of the hospital at Big Fork for eighteen months before entering the nurses' corps in the army where she served for two years.

* * *

Recently elected chief of staff of Fairview Hospital, Minneapolis, Dr. Nora Winther is the only woman

physician ever to head a medical staff of a general hospital in Minneapolis. A gynecologist, Dr. Winther is a graduate of the University of Minnesota Medical School.

Other officers elected to head the Fairview staff are Dr. A. C. Skjold, vice chief; Dr. R. A. Hoffman, secretary, and Dr. D. B. France, treasurer.

* * *

BLUE SHIELD NEWS

Number of persons covered by Blue Shield as of May 15, 1948	21,145
Number of Blue Shield cases paid on May 15, 1948	140
Total for 1948	352
Amount paid on Blue Shield cases on May 15, 1948	$ 5,187.23
Total for 1948	13,402.66

The following is an article released by the Associated Medical Care Plans which is the National Association of Blue Shield Plans. This article has been sent to all state medical journals to explain Dr. Paul R. Hawley's appointment as chief executive officer of Blue Shield and Blue Cross and also his relationship to each plan. It is felt that this article will debunk the idea that Blue Shield and Blue Cross are going to merge.

Blue Shield and Blue Cross Form Joint Executive Committee

Agreement was reached late in March between Blue Shield and Blue Cross plans, during their 1948 Semi-annual Conference in Los Angeles, on the forming of a Joint Executive Committee.

As chief executive officer for Blue Shield and Blue Cross, Dr. Paul R. Hawley will be solely responsible to the Joint Executive Committee on all matters of mutual concern to both organizations, reporting directly to each organization separately on those matters as in his judgment are of sole concern to either body individually.

"This merging of interests in the mutual employment of an executive officer does not change the status of either organization," said Dr. L. Howard Schriver, president of the Blue Shield national organization. "It means, simply, that both Blue Shield and Blue Cross recognized the advantage to be gained in securing the leadership of an outstanding administrator such as Dr. Hawley has proved himself to be in his handling of previous responsibilities."

The newly created Joint Executive Committee will consist of six members, equally divided between Blue Shield and Blue Cross Commissions.

J. Douglas Colman, chairman of the Blue Cross Commission, will serve as chairman of the joint committee until the annual meetings of Blue Shield and Blue Cross plans in the fall of 1948.

While the present chairman of the Joint Executive Committee is a representative of the Blue Cross Commission, it was agreed that the chairmanship of this committee should alternate semi-annually. A Blue Shield representative will become chairman of the joint committee immediately following the next annual meetings.

Representing the Blue Shield Commission on the Joint Executive Committee are Dr. L. Howard Schriver, Cincinnati, president of Associated Medical Care Plans



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(national association of Blue Shield plans); Dr. F. L. Feierabend, Kansas City; and Jay C. Ketchum, Detroit.

Frank E. Smith, director of the Blue Shield organization, and Richard M. Jones, director of Blue Cross, will hereafter be administratively responsible to Dr. Hawley, and through his office to the Blue Shield and Blue Cross commissions respectively.

Blue Shield and Blue Cross staffs now occupy office quarters at separate locations in Chicago. It was agreed in Los Angeles that both staffs should occupy offices at a common location in order that Dr. Hawley's administrative duties might be simplified. Negotiations are under way currently for the securing of new office space which will adequately house both national organizations.

Since Dr. Hawley assumed his position as chief executive officer for Blue Shield and Blue Cross on April 1, he has been filling many speaking engagements with state medical societies, hospital organizations, and civic clubs.

As one of his first official duties, Dr. Hawley represented Blue Shield and Blue Cross on the executive committee of the recent National Health Assembly, held in Washington, D. C., on May 1-4.

The Minnesota Blue Shield would like to take this opportunity to announce that claims are now being paid weekly instead of monthly. Payments are sent to Doctors of Medicine each Friday for the cases that have been completed during the previous week. By doing this the vast majority of cases will be paid in two weeks or less, thus it will be possible in most instances for the physician to show this allowance on the patient's monthly statement.

MINNESOTA DEPARTMENT OF HEALTH

Improvement of conditions in Minnesota's institutions for the mentally ill, and development of more effective techniques for preventing mental illness, were the chief measures urged by psychiatrists who took part in the first Mental Health Institute to be held in Minnesota. This Institute, designed to acquaint lay leaders with aspects of the mental hygiene problem and with the views of physicians regarding methods for its solution, was held June 7-9 on the University Campus, under the joint auspicies of the State Department of Health, the

(Continued on Page 715)



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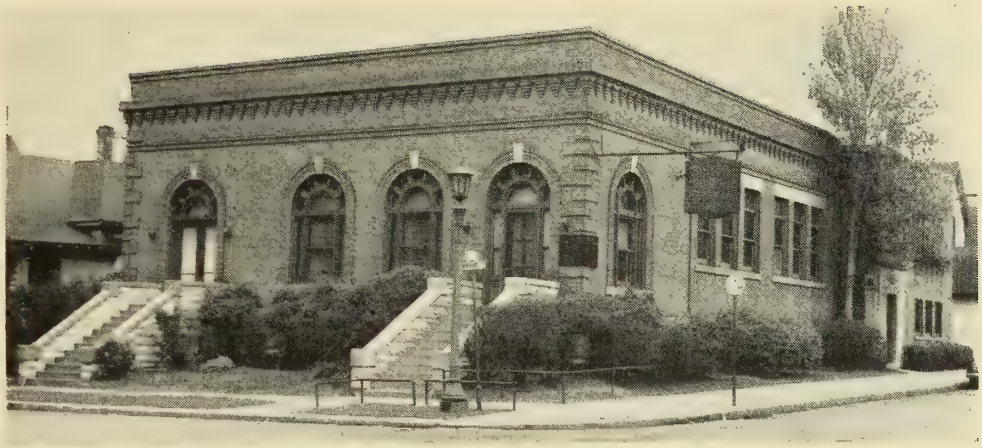
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UNITED PROPERTIES INCORPORATED

(Continued from Page 713)

Minnesota Mental Hygiene Association, and the University.

Dr. A. Alan Challman, of the University's Department of Psychiatry and Neurology, characterized mental illness as today's number one public health problem. There are not enough psychiatrists available to staff the community clinics often suggested by the public at present, he pointed out, and the training of more psychiatrists and psychiatric aids is one of the chief needs of the immediate future. Another great need is expansion of the research program in this field. At present, he said, only 25 cents a case is being expended on research, whereas thousands of dollars are spent on the care and treatment of each case.

Dr. Alexander G. Dumas, chairman of the Governor's Committee on Mental Hygiene, voiced the committee's recommendation that a five-million-dollar psychiatric institute be set up in connection with the Medical School of the University of Minnesota within the next three years, primarily as a training center for all types of psychiatric workers, including physicians, nurses, social workers, and attendants. Patients would be referred by their own physicians, and a continuous research program in acute treatments would be maintained.

Other physicians on the Institute program were Drs. Edward Dyer Anderson, C. A. Aldrich, Harold B. Hanson, Donald W. Hastings, Roger W. Howell, Reynold A. Jensen, Hyman S. Lippman, and Edmund W. Miller.

BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

NEUROANATOMY. Second Edition. Fred A. Mettler, A.M., M.D., Ph.D. Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. 536 pages. Illus. Price, $10.00, cloth. St. Louis: C. V. Mosby Co., 1948.

SUCCESSFUL MARRIAGE. Edited by Morris Fishbein, M.D., and Ernest W. Burgess, Ph.D. 547 pages. Price, $6.00, cloth. Garden City, N. Y.: Doubleday & Company, Inc., 1947.

SYNOPSIS OF PEDIATRICS. Fifth Edition. John Zahorsky, A.B., M.D., F.A.C.P. Professor of Pediatrics and Director of Department of Pediatrics, St. Louis University School of Medicine, and Pediatrician-in-Chief to St. Mary's Group of Hospitals, Fellow of American Academy of Pediatrics. Assisted by T. S. Zahorsky, B.S., M.D., Senior Instructor in Pediatrics, St. Louis University School of Medicine, and Assistant Pediatrician to St. Mary's Group of Hospitals. 449 pages. Illus. Price, $5.50, flexible binding. St. Louis: C. V. Mosby Co., 1948.

HISTORY OF THE MEDICAL SOCIETY OF THE COUNTY OF WESTCHESTER, 1797-1947. A compilation from the available minutes of the Society and various contemporary sources during the years for which the minutes were lost. 193 pages. Cloth. White Plains, N. Y.: Medical Society of the County of Westchester, 1947.

THE METROPOLITAN LIFE: A STUDY IN BUSINESS GROWTH. Marquis James. 480 pages. Illus. Price, $5.00. New York: The Viking Press, 1947.

The story of the Metropolitan Life Insurance Company parallels the development of life insurance in this country. Since medicine and life insurance are mutually

related both from the standpoint of risk evaluation and the public health and educational programs fostered by this company and others, the book should be of interest to many physicians.

LEO A. NASH, M.D.

OFFICE TREATMENT OF THE EYE. Elias Selinger, M.D., Attending Ophthalmologist, Mount Sinai, Cook County and Michael Reese Hospitals. 542 pages. Illus. Price, $7.75. Chicago: The Year Book Publishers, Inc., 1947.

The author has outlined and discussed the many procedures used in the ophthalmologist's office. The material is concise and well organized. The author presents many new and clever procedures used in office practice. This book is especially recommended to the ophthalmologist beginning private practice.

FRANK ADAIR, M.D.

TUBERCULOSIS AND THE FAMILY DOCTOR

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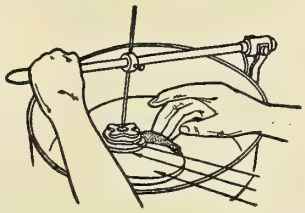
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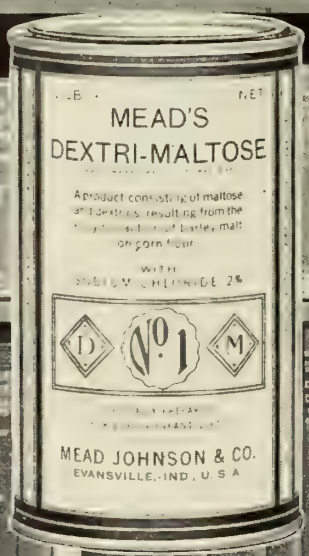
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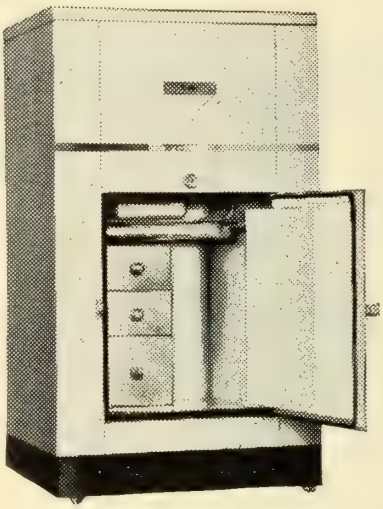
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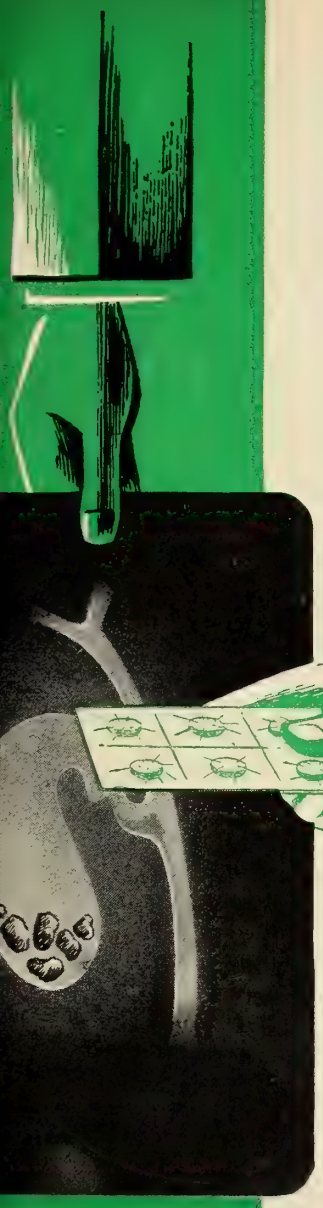
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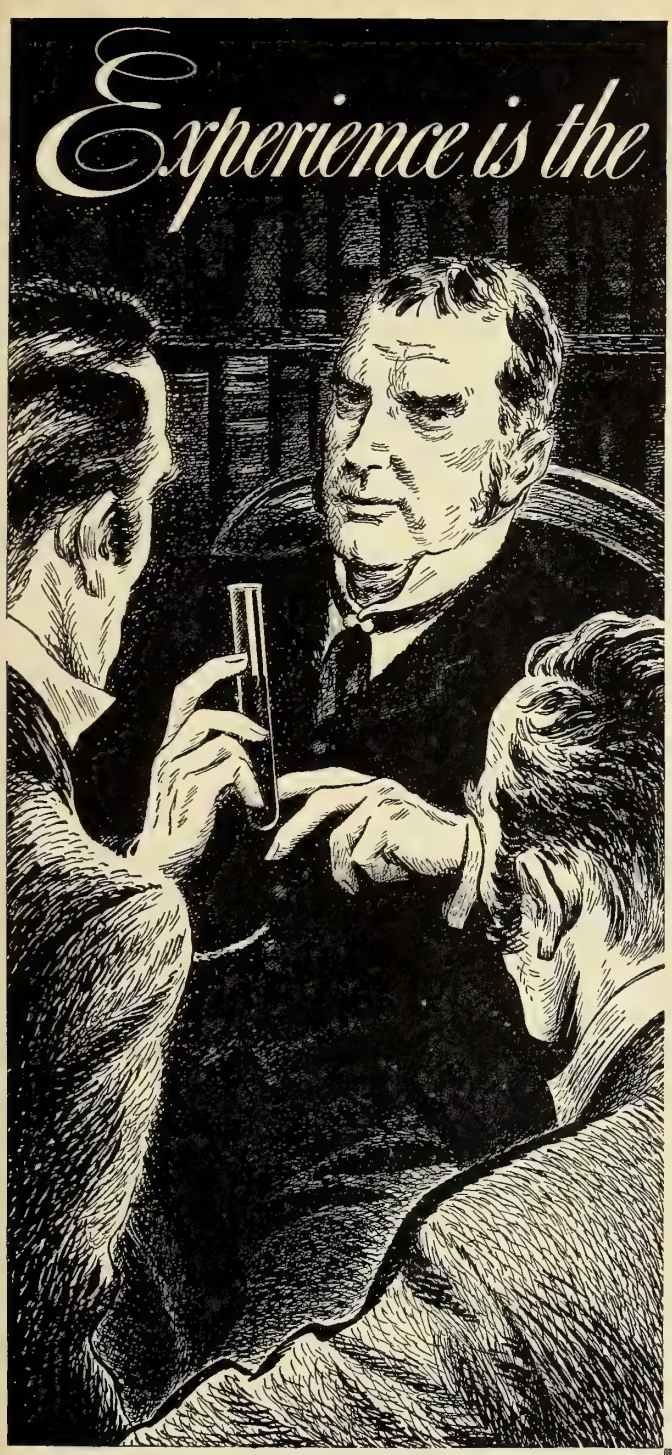
2 Zeigler, R.F., Jr.: Pre-eclamptic Toxemia of Pregnancy. North Carolina M. J. 8:655 (Oct.) 1947.

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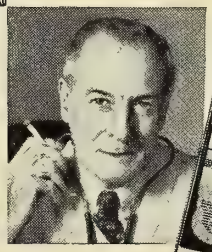
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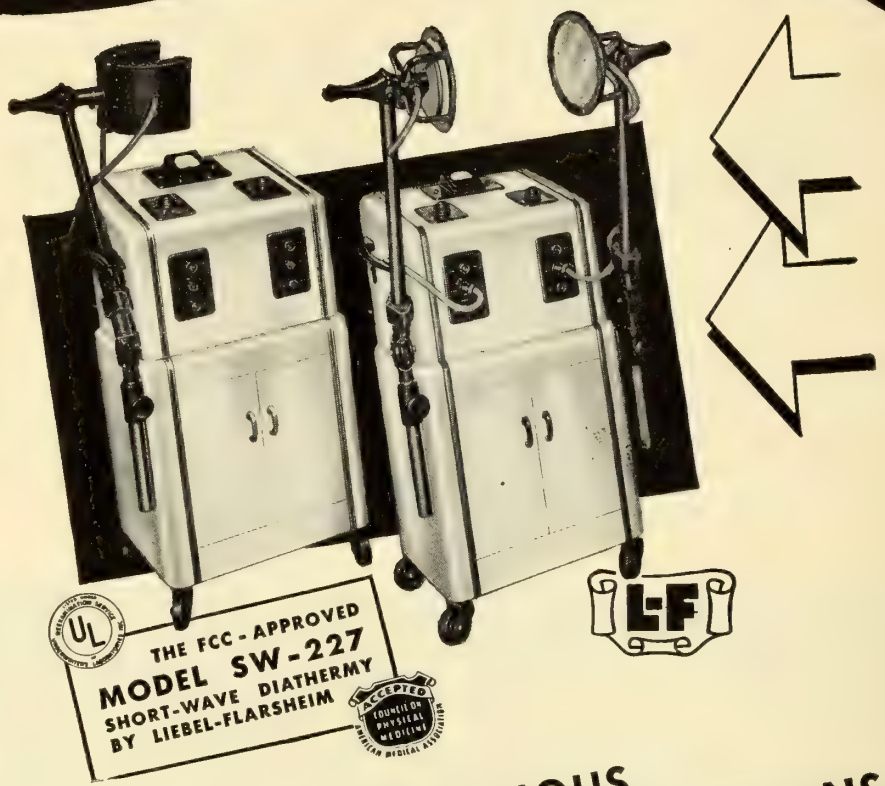
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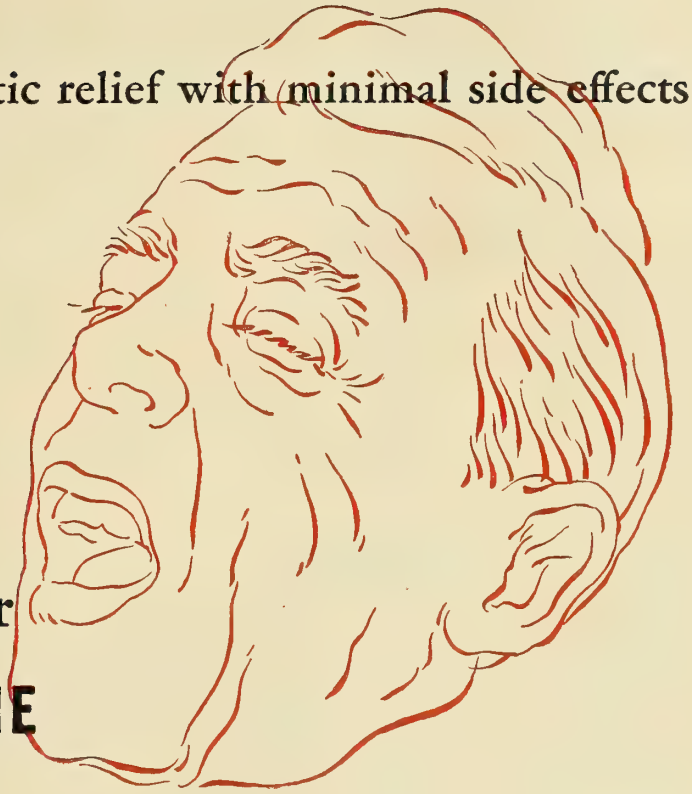
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1. Arbesman, C. E.: *N. Y. State Jl. of Med.*, 47: 1775, 1947.
2. Loveless, M. H.: *Am. Jl. of Med.*, 3: 296, 1947.
3. Bernstein, Rose and Feinberg: *Ill. Med. Jl.*, 92: 2, 1947.
4. Osborne, Jordon and Rausch: *Arch. of Derm. & Syph.*, 55: 318, 1947.

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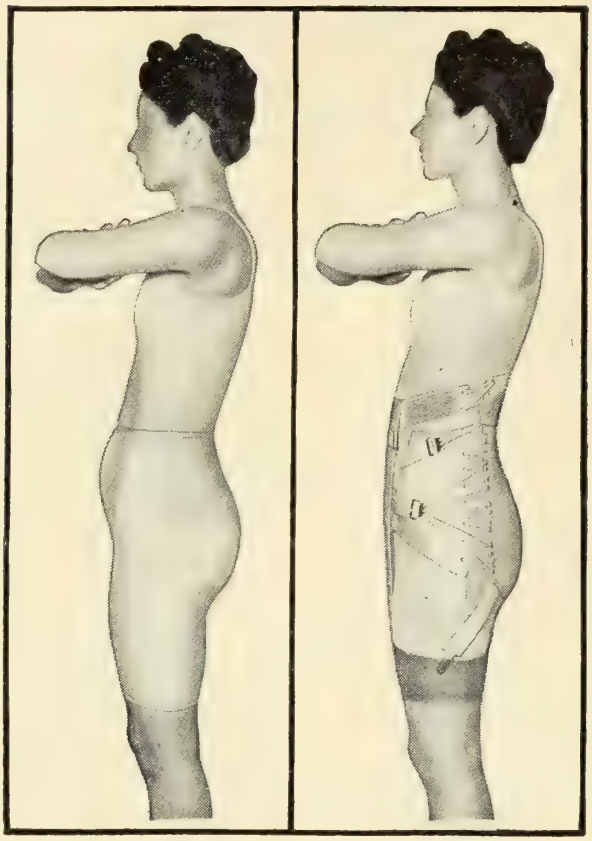
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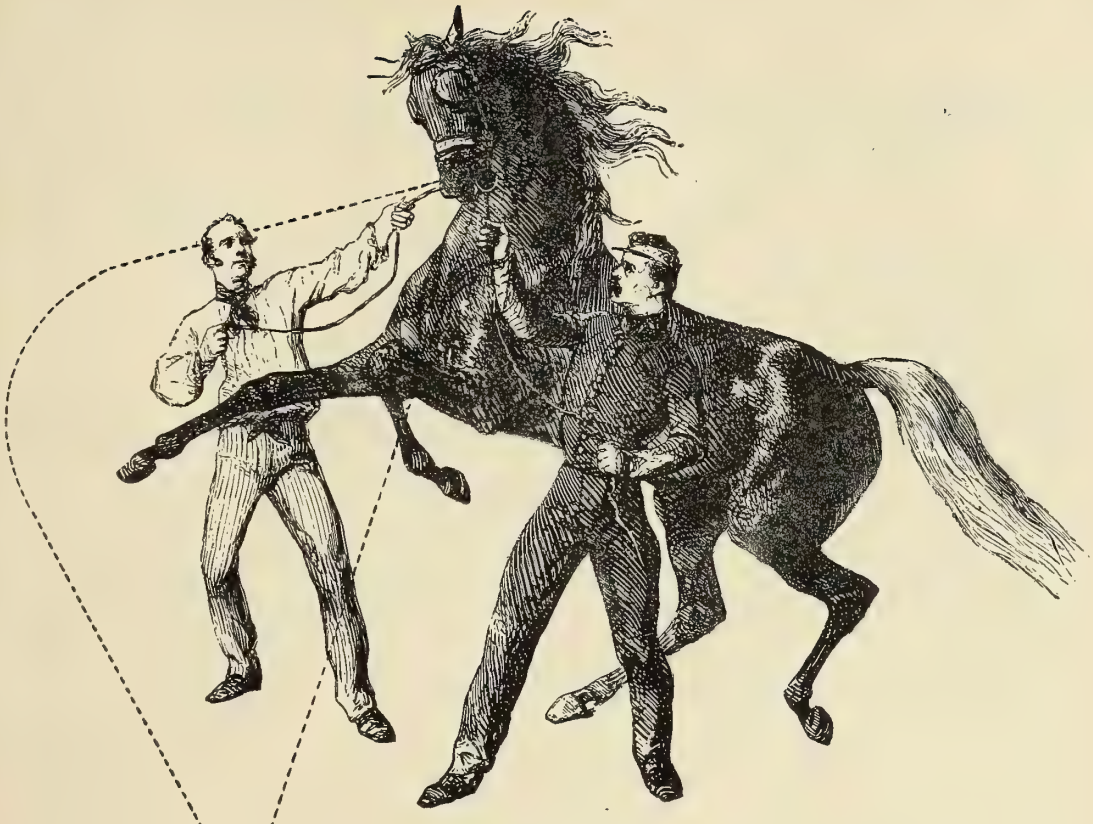
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Minnesota Medicine

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DISTRIBUTION OF GENERAL PRACTITIONERS AND SPECIALISTS

WILLIAM DUNCAN, M.D.

Webster, South Dakota

TO THIS audience it should be unnecessary to report that there is a growing interest in the present problems and the future of the general practitioner.

Attention to this important subject no doubt has been aroused chiefly by two things:

1. The diminishing number of general practitioners in rural areas, notably in the small towns which in former years had one or more physicians.

2. The relatively rapid increase in the number of certified specialists, and also the large number of medical students and physicians discharged from the armed forces who have indicated their intentions of becoming specialists.

There are at present sixteen approved examining boards in medical specialties, and some of these now provide for examinations in subspecialties. As of March 1, 1947, a total of 28,476 certificates had been awarded by the various boards. This figure includes those who have died and those who have retired from practice. However, the "Directory of Medical Specialists" lists 24,028 specialists certified prior to November, 1945, and this figure represents only those living at the time of publication in 1946, although it does include those retired from active practice. On the other hand, only two of the sixteen boards were incorporated prior to 1930, so it should be fair to assume that with the numbers added since November, 1945, there are approximately 25,000 living and active certified specialists in the United States. A recent estimate from the American Medical Association indicates that the total number of practicing physicians is 160,000.

In other words there is one specialist for each 6.4 physicians in this country, and that ratio is evidently getting larger.

From March 1, 1946, to the same date in 1947, 2,404 certificates in specialties were awarded. The number of medical school graduates during a like period, June 1, 1946, to June 30, 1947, was 6,389 (this figure represents a period of thirteen months and includes ten schools which graduated two classes during that time, hence is relatively larger than an average year). Even so, the present ratio, as indicated by these latest figures, shows that for each specialist certified there were only 2.6 medical students graduated.

These figures are not being given necessarily to prove anything in particular, but they do show a definite, if not overwhelming, trend toward specialization, and everyone cannot be a specialist if we are to maintain our present concepts of the practice of medicine.

At the last annual assembly of the Omaha Mid-West Clinical Society in October of this year, a round-table discussion was held on the subject, "What is being done about the present problems and the future of the general practitioner." Among other subjects, overspecialization was discussed, and some very good points on this were brought out by Mr. M. C. Smith, executive secretary of the Nebraska State Medical Association.

The same subject was discussed at a recent meeting of the Association of American Medical Colleges. It was shown there that at least some of the specialty boards are becoming quite con-

Presidential Address presented at the North Central Medical Conference, November 23, 1947, Saint Paul, Minn.

cerned about the present trend and are hoping that in some way it might be stemmed to a certain extent.

From what has been said it would seem that we are facing a problem of overspecialization, or too many specialists. On the other hand perhaps this could rather be looked upon as a problem of too few general practitioners. We all know that there is still a great demand for specialists, especially in certain categories and in certain parts of the country. There are definitely not too many specialists in South Dakota; quite a few more, properly distributed or located, could be very useful, not only to themselves, but to the general practitioners now there and to what, after all, is the most important of all, the people of South Dakota. (This should not be interpreted to mean that the people of South Dakota are *suffering* from lack of medical or specialists' care, but to many of them it not only entails great inconvenience, but also, to my way of thinking, unnecessary hardships in order for them to reach certain types of specialists—notably ophthalmologists, otolaryngologists and psychiatrists.)

Consequently, with specialists as well as general practitioners, perhaps the really great problem is that of proper distribution.

This brief discourse was in no way intended to state a problem and then point out the solution.

However, a few suggestions pertaining to the solution will be offered:

1. The AMA or the Advisory Board for Medical Specialties should make an attempt to determine the optimum number of specialists needed. This, of course, should include not only the number of each type needed, but also (and of the utmost importance) *where* they are needed.

Naturally this would be quite an undertaking, but it should not be too difficult. The armed forces had definite, even though misguided, ideas about how many physicians they should have for each 1,000 men. Also Procurement and Assignment Services worked out their problems on the basis of ratios, one physician for each 1,500 civilians.

2. The same thing should be done concerning general practitioners, that is, determine the optimum number needed and again *where* they are needed.

3. This information should always be kept up to date, and it should also be given great publicity among medical students. In fact, at least a few lectures on the subject could well be given to the senior class, with great emphasis being placed on where they are needed.

4. Medical schools might very well arrange their curricula to allow for considerable more time in teaching medical history and ethics. For example, how many medical students have been taught the precepts of Hippocrates, especially the following one? "Sometimes give your services for nothing, calling to mind a previous benefaction or present satisfaction. And if there be an opportunity of serving one who is a stranger in financial straits, give full assistance to all such. For where there is love of man, there is also love of art. For some patients, though conscious that their condition is perilous, recover their health simply through their contentment with the goodness of the physician. And it is well to superintend the sick to make them well, to care for the healthy to keep them well, but also to care for one's own self, so as to observe what is seemly." It would not hurt to point out that medicine had its origin in the ancient temples, and although the teaching of medicine is now practically completely separated from religion, it is still based entirely on service to mankind. It has been said, "The right to serve is man's one freedom that must never be denied. For out of free men's devotion to their self-appointed tasks have come the great gifts to all mankind."

There could be nothing wrong with attempting to instill in these students more of the higher values in life, and especially to keep before them this question, "Where am I needed?"—not just "Where do I want to go?"

5. As for the specialty boards, they might consider two things. One, encourage these young men to go out into general practice for a while. Arrange in some way to give them some credit for a few years in that type of work. Do not restrict them on age. Enough of them will no doubt return to become specialists, and perhaps a few of them will learn to love their work and the people they serve so well that they will stay in general practice. Those who go out and then return might even become better specialists than otherwise, for I am sure that quite a few of our most eminent specialists started out in general practice.

(Continued on Page 755)

COMMUNITY LEADERSHIP BY PHYSICIANS

THOMAS A. HENDRICKS
Chicago, Illinois

ABOUT the most delightful experience that life brings is a visit to one's birthplace. Today, as a representative of the Council on Medical Service of the American Medical Association, I am enjoying the nostalgic, though vicarious, thrill of a homecomer, for it was here at the North Central Conference that the idea and the propulsive force originated some four years ago, which brought the Council into being.

As I stand here, I see many who first sponsored the idea and then fought it through the House of Delegates. Last year at your meeting we reviewed a bit of the history of that battle. This year we hope in some way to express the gratitude that a son owes to a parent, and to have a family discussion of the problems facing the Council on Medical Service as it comes of age and perhaps determine just what function that Council can best perform for American medicine.

It was here too that the Council's medical regional conference was born, for it was your group which held the first modern medical economic regional conference. These regional conferences, developed nationally by the Council, have become recognized as functional units of American medicine, and have done much to make national, state and county medical societies efficient, effective, vital, driving forces in the medical life of America. These regional conferences have kept the physicians of America informed as to what the AMA is doing, but, far more important, they have kept the AMA in touch with the desires, wishes, hopes, ideas and ideals of the individual physician.

Here lies the source of the Mississippi River, at the start merely a trickle. By the time that trickle reaches the sea it has become a mighty giant, our Father of Waters—Old Man River—fertilizing and influencing much of our national life. So, our regional conferences, which started here as small, informal get-togethers, attended at first by a handful of state society leaders, have grown into conferences of formidable force and influence.

Not only have these conferences grown in size, they have become enlarged in concept, and in some regions have attained a status of permanency. The Middle Atlantic states have developed a regional organization with a constitution. At the recent Southeastern Regional States session, where the health problems of twenty million citizens of eight southern states were discussed, a new approach to the regional conference was developed—participation in these round-table discussions by representatives of the public, *thought leaders* of that region, leaders of thought on rural, educational, industrial problems. From this conference has developed an interim committee which is to map out a program for the health of the citizens of that region and leave it up for action to the various state societies composing the region.

The Board of Trustees has asked the Council to correlate and integrate, insofar as possible, regional conferences on rural health and industrial health with the medical service conferences. This is being done wherever possible.

It is my personal feeling that wherever permanent organizations such as yours and that of the New England states exist, our conference be made a part of your conference whenever you desire us to participate.

I have mentioned the phrase "thought leaders." By that we mean the molders of opinion in each community. It is with this group that the medical societies should act, and action can only be effective if the local medical societies are the thought leaders and opinion molders in matters of community health.

To me, the keenest and at the same time the most jolting and disheartening criticism that has appeared in all the multitude of recent studies and surveys which have abounded with detracting comments in regard to the medical profession is not found in the voluminous records of the Wagner-Murray-Dingell bill hearings, nor statements by Boas, Falk or Michael Davis. All these are of minor importance, for American medicine and the American people can and will in time sift out the good from the bad, the effective from the emotional, and continue to do what medicine always has done in the past—give the American

Read at the North Central Medical Conference, November 23, 1947, Saint Paul, Minnesota.
Mr. Hendricks is secretary of the Council on Medical Service, American Medical Association.

people an increasingly expert and efficient medical service, the best received by any nation in any time in the world's history.

The remarks which disturb me come from Robert and Helen Lynd in their case history study of "Middletown," *Middletown in Transition.* Of course, we were particularly interested in these studies in Indiana because "Middletown," picked as a typical American city, is Muncie, Indiana. Figures, facts and conclusions in regard to the political, social, educational, professional and business conditions and life contained in that study will interest any reader, for some of the charges against Middletown's citizens apply to almost any American community.

The Lynd's say: "A point worth noting is the loss of intellectual leadership and independence of Middletown's doctors and lawyers. Some of Middletown's most ruggedly independent thinkers in 1890 were the local doctors, judges and lawyers. These men less often speak their minds, they become to a greater extent intellectually colorless and are sticking to their last making money like the rest of Middletown's businessmen."

Perhaps we can laugh off most criticisms, but this one strikes deep into the heart of every American. You may say a doctor is a fraud, is "cracked"; you may even call him a quack, but never call him colorless! We do not believe the Lynds are correct, but if doctors are losing their intellectual leadership, their independence of thought and expression and action—their color—it causes one to worry about the shape of things to come.

I believe it was this that Dr. Buie had in mind in his unusual and beautifully written paper, "For Manners Are Not Idle."* I would like to quote for you the last two paragraphs:

> Accordingly, outstanding qualities of estimable men are these: gentleness and courage, boldness and prudence, tolerance, reverence, confidence, stability, humility, wisdom, patience and honesty. I believe not only that possession of these qualities engenders good manners but that the exercise of good manners furnishes proper soil for the cultivation of these qualities. The two elements working together, not alone, I believe, would do much to allay those twin dreads of the world today: fear and want.
>
> Finally, we, in our profession, have been reared well. The code of ethics of our organization provides that "a physician shall be an upright man, instructed in the art of healing." Furthermore, he "must keep himself pure in character and conform to a high standard of morals and must be diligent and conscientious in his studies . . . conducting himself with propriety in his profession and in all actions of life." Perhaps no other group is in a more favorable position to exemplify the union of good manners and good faith.

Endowed with a formal education and background beyond that available to any other group in the community, experienced in daily intimate contacts with their fellow men as are no other individuals, the members of the medical profession are expected to have a conception of affairs, an analytical power, an outspoken independent viewpoint that gives warmth, expression, humor, philosophy and "color" to their communities. The physician more than any other person should have a decisive influence on the life, the thinking and the daily habits of the people.

Whether it be Middletown, Indiana or Iowa; Middletown, Wisconsin or Minnesota; or Midland, South Dakota—Middletown must never lose the grand tradition of personal, independent action and thought which we hope and pray characterizes the physician. The American medical profession must never backslide from the fearlessness and courage of its men who told their world what they thought and their world listened and molded its action accordingly.

Groundwork has been laid by American medicine for a great development in the health services for the American people. To state and county medical societies goes the credit for this progress. Most societies resume their regular schedule of meetings in the fall. These are essential services that each state and local society should supply for American medicine to perform with community leadership:

Basic Records.

Each society should have for immediate reference an accurate evaluation of the medical personnel and facilities in each of its communities. Definite facts must be had to answer many of the sweeping and often unfounded claims by those who advocate that the government take over medical practice.

Health Councils.

Many communities have found local health councils a medium through which physicians with other interested and responsible groups may further the health programs of their communities. The Council on Medical Service has prepared a brochure suggesting ways of forming these health councils. This is a preliminary

*Presidential Address, Louis A. Buie, M.D., President Minnesota State Medical Association, delivered at the ninety-fourth annual meeting banquet, July 1, 1947.

release on this subject and will be followed by further reports as reactions are received and evaluated in the light of actual experience as to the value of health councils. If you desire this publication, write to the Council on Medical Service.

Public Relations.

The American Medical Association has adopted a program for activity to bring these health services to the public:

Ten Point Program.—An important point of this program is the development of voluntary health insurance as opposed to compulsory sickness insurance.

"National Health Policy."—An equally important point in the Ten Point Program is the care of the indigent. A resolution on policy to be followed in meeting this problem was adopted by the House of Delegates at the Atlantic City Session. The "National Health Policy" was developed by the New Jersey State Medical Association and the principles of this program set up in New Jersey have now become a further guide for leadership by the profession. The Board of Trustees has referred the resolution to the Council on Medical Service for action. In considering this for state action, it may be well to keep in mind the development of local health councils.

Professional Relations.

Most important of all to a functioning state or local medical society is good professional relations as distinguished from public relations. Fundamental to good professional relations must be a good feeling and understanding among the individual physicians composing the medical society. The seven deadly sins to be avoided to have a functioning local society and the seven characteristics to offset them are: Inertia, offset by Enterprise; Reaction, replaced by Progress; in place of Cliques, Friendship; not Discord, but Harmony; less Provincialism and more Vision; instead of Smugness, Leadership; and to replace Defeatism, Courage.

Dr. Walter Martin's statement of the obligation and necessity for community leadership at the Southeastern Conference is a good one: "National organizations can carry on studies, accumulate data, establish standards and formulate plans but state and local societies to a large extent must implement these policies. Medical plans for a community must fit into community planning as a whole and into the community way of life, and they must be designed primarily for the benefit of the people and not the profession. Plans for improving medical care should be on a community-wide basis, should receive their primary impetus and sustained force from the community."

The Council on Medical Service, which as I said before had its origin here in this North Central Conference, has become an important instrument. The Council serves as the "sparky," the pilot planner for medical organization. The frankest and perhaps the most forthright statement concerning the function of the Council has not appeared in any formal report of the Council. It was made by Dr. Adson, vice chairman of the Council, at Atlantic City.

"A number of years ago some of us were the spearhead for a progressive movement within the American Medical Association. This Council is, to a great extent, the result of that movement. At that time we had certain things in mind for the Council to do. In general, our purpose was to implement the functions and activities of the AMA. But there were certain definite lines of activity which we felt needed immediate attention.

"One was to present the AMA to the state medical societies. In order to do this, we set up district meetings and called in officers and committeemen from the various states. . . .

"One of our first developments in the Council was the News Letter. . . . The headquarters office has developed what they call a Secretary's Letter.

"Another activity that we have entered into is the promotion of prepayment plans. We started the ball rolling in this and were charged with the promotional activity. AMCP (Associated Medical Care Plans), organized under our instigation, has now come along and taken over many of the details having to do with prepayment plans. . . . We must realize that these things are bound to happen as we create, prove and pass on or lose functions to others.

"We have tried to stimulate rural health, and now the House of Delegates has created a committee on rural medical service whose function it is to consider and develop plans along that line.

"Some time ago we discussed indoctrinating medical students in their junior and senior years of medical school. We spent some time discussing the creation of an Association of Medical Students, granting the students an associate membership, and making the *AMA Journal* available to them. Although the Council was unsuccessful in bringing this to pass, the suggestion was made by this year's incoming president that just such a policy be established, and his suggestion was approved by the House.

"If the Council is going to live and grow, and if we are going to hold the confidence of the profession that we have had, we cannot go to sleep. I think each one of us will have to keep his ears to the ground to get the pulse of what is going on around us. I feel that if the Council is going to live and contribute to medicine as we have attempted to do, we cannot sit still."

In this spirit of pioneering, in conclusion, I am going to hazard the following five proposals for your reaction. They have not been discussed

formally either by the Council or the Board of Trustees. Your criticism, comments and suggestions will be appreciated:

1. The publication of a book *Best Talks on Medical Economics for 1947*. Doctors are good pamphleteers, but they don't have time to write full-length books.

2. Appointment of subcommittees to put into action each point of the Ten Point Program of the American Medical Association.

3. Better use of local committees on medical service. Other subcommittees could be created under the Council, such as a subcommittee on voluntary health insurance, dealing with the entire field of prepayment; a subcommittee on professional relations, having to do with the news letters and the regional conferences. Then, in order to make this reorganization effective, that the state medical societies be urged to create or reactivate their committees on medical service. (Some of these are termed committees on medical service and public relations.) Perhaps even the county medical societies could be asked to create similar committees. From these state committees doctors would be selected to serve on the subcommittees of the Council on Medical Service. In this way we could maintain direct contact with the thoughts and ideas of both the state and county medical societies so that we might better assist them in carrying on effective community leadership. This type of reorganization would make the regular regional conferences more effective and would provide the Council with more continuous contact with both the state and county medical societies. While the Council on Medical Service, as it is now constituted, represents all parts of the United States, reorganization would expand this representation and provide for an even better distribution of thoughts and ideas.

4. Reorganization of the Council on Medical Service so as to have the following divisions and departments: (1) extension of medical care, (2) prepayment, in all forms, and (3) professional relations.

At Leavenworth and at the Army Staff College in Washington, studies are made and plans formulated for the defense of America in any eventuality: How would America be defended if the West Coast were invaded? What disposition of forces would be necessary if the East Coast were in the hands of the enemy? What plan of action could best be taken if invasion forces moved in through Mexico or Canada?

Teams are at work on each problem. Could not groups be set up to do the same for medicine? One group could work on each problem. How may the best medical care be made available if medicine were able to lay out its health program unhampered?

How may the individual integrity of the physician best be maintained if inroads are made by the Children's Bureau, by liberalization of the VA program to include dependents, which would make the government responsible for some forty million Americans?

What does all this add up to? Just this: Like Omar Khyam we keep coming out the same door that we went in—the county medical society—a door which must swing wide open to welcome all those who have health problems, and from whose portals must emerge men who are willing in these critical days to assume community leadership.

RATIO OF DISEASE TO INCOME

It will be noted that families with an income below $1,000 per year have nearly four times as much disability from tuberculosis, nearly three times as much disability from orthopedic impairments, and approximately twice as much disease and nervous disease as families with incomes over $5,000. For relief families, the ratio rises to nearly ninefold for tuberculosis, and fourfold for orthopedic impairments, between threefold and fourfold for rheumatism and digestive diseases. Considering all causes of disability together, the group with incomes under $1,000 shows 66 per cent more disability and the relief group shows 155 per cent more than the families with incomes over $5,000.—C. E. A. Winslow, D.Sc., Am. J. Pub. Health, Jan., 1948.

CAN THE LOCAL HEALTH CO-OPERATIVE FIT INTO THE VOLUNTARY PREPAYMENT MEDICAL CARE MOVEMENT?

L. S. KLEINSCHMIDT
Chicago, Illinois

IT SEEMS to me that a discussion of this subject is very fitting in the North Central Medical Conference here at Saint Paul. The six states represented in the Conference—Iowa, Minnesota, Nebraska, North Dakota, South Dakota and Wisconsin—are the center of an area where much impetus has been gained in the co-operative and consumer-sponsored movements, particularly in the rural phases, although they were not the first to undertake group action in attempting solutions to some of their problems. There are 1,625 local co-operative associations of all types reported in these states.

Again, in view of the forward-looking suggestions and actions that have served a real purpose in assisting to unify the thinking of the medical profession coming, I am told, from this conference in the past, it seems timely to discuss this subject today.

The problems suggested by this subject are a definite part of the medical profession's public relations problem and mesh with the other subjects on this program especially if our today's subjects are slightly restated as follows:

1. Physician's relationship.
   (a) With public agency medical care.
   (b) With veterans' medical care.
   (c) With consumer-sponsored medical service.
2. Meeting rural health service needs.
3. Establishing local health councils.
4. Leadership by physicians.

In reviewing the over-all relationship, this question is logical, "Can the local health co-operative fit into the voluntary prepayment medical care movement?" First, let us consider how new the consumer-sponsored medical service plans are and when the medical profession recognized their activities as voluntary prepayment plans?

The oldest plan so far reporting to us is the French Mutual Benevolent Society of San Francisco, California, organized in December, 1851. However, noticeable expansion did not develop until in the early 1930's. Approximately two-thirds of all consumer-sponsored medical service plans have been developed in the past nine years.

The Bureau of Medical Economics took notice of this development and in April, 1937, published an article in the *Journal of the American Medical Association* that was distributed as a reprint. This statement was made: "The co-operative movement is not new, although only in recent years has it begun to attract national attention." In 1941, the same bureau reported: ". . . There has been no opposition to the use of the principles of insurance purely as a means of meeting the cost of medical care when there was no interference with the quality of service."

The House of Delegates of the American Medical Association in 1943 established the Council on Medical Service and enumerated functions which read in part: "To make available facts, data, and medical opinions with respect to timely and adequate rendition of medical care to the American people; to investigate matters pertaining to the economic, social and similar aspects of medical care for all the people and to study and suggest means for the distribution of medical service to the public consistent with the principles adopted by the House of Delegates."

In 1945, the House of Delegates approved "a continuous survey of all voluntary plans for hospitalization and illness to determine their adequacy in meeting needs and maintaining continuous improvement in quality of medical service." During the same meeting of the House of Delegates, the Committee on Rural Medical Service reported in part: "Prepayment plans for medical care and for hospitalization have the approval of many farm groups; however, some of them feel that such plans should be consumer-operated. Such plans should be made available to farm groups as early as experience permits."

Additional discussion of co-operatives on the part of the medical profession occurred from time to time, reaching its height of interest following the conference of co-operative and consumer-sponsored health service plans held at Two Harbors, Minnesota, in August, 1946. During this conference, a national organization of these

Read at the North Central Medical Conference, November 23, 1947, Saint Paul, Minnesota. Mr. Kleinschmidt is a member of the Council on Medical Service of the American Medical Association.

plans, the Co-operative Health Federation of America, was organized.

In December, 1946, the Council on Medical Service reported it "is gathering information and data relative to the medical co-operative movement throughout the country." The Committee on Rural Medical Service reported that "the development of co-operative associations and other consumer-controlled groups for provision of medical care has received considerable attention. This is an interesting experiment in the rural effort to do something constructive from the point of view of the consumer. The medical profession should be concerned in all these plans with the view that a high level of medical care be supplied." The House of Delegates approved the study of these plans. It recognized that while there is some difference of opinion regarding the establishing of consumer co-operative medical care programs, nevertheless they are functioning in certain areas, and stated that in order to ensure good medical care certain basic principles be formulated.

Consumer-sponsored programs then date back ninety-six years in the United States. The American Medical Association has been particularly interested in their activities for the past ten years, the period of their greatest growth. The second point to consider may well be the size of these plans and where they are located.

In our discussion of these plans may I point out that the source of information is from the plans themselves. We expect to continue the study to check the information we have, and to obtain additional information at a later date from physicians in areas where these plans are in operation.

According to information so far gathered, we have knowledge of seventy-nine consumer-sponsored local health service plans. We have leads out that we believe may put us in touch with additional plans. The seventy-nine plans on our list are located in twenty-seven states and the District of Columbia. They operate in industrial areas, urban areas and rural areas. Where they do operate, they are supported by labor unions, by workers in a particular industry and by farm organizations. Usually they have been built in a given area by a particular group who have, or think they have, been faced with a lack of medical facilities and personnel or with an economic problem in meeting the costs of improved medical care or both.

Forty-eight of the seventy-nine plans show a total enrollment of 674,653 persons. Of these, 428,883 are urban and 245,770 (36.4 per cent) are rural coverage. If we should assume that the remaining thirty-one plans had an average enrollment similar to those reported, then the probable enrollment in consumer-sponsored and co-operative plans would total 1,106,000 persons.

Just to help visualize this enrollment, it might be compared with the enrollment figures of medical service plans. Medical society plans have actual enrollment six times as large as the probable enrollment of these consumer-sponsored plans. If we make average allowance for the medical service plans that have not given rural enrollment figures, the total persons enrolled from rural areas is about the same for medical service plans and for consumer-sponsored plans. Stated on a percentage basis of the total enrollment for each, we find 8.3 per cent of medical service plan enrollment is composed of rural subscribers, and 36.4 per cent of the enrollment in consumer-sponsored plans in rural.

These plans seem to be of sufficient size and importance to justify the serious consideration of the medical profession, especally their potential possibilities in rural areas.

As a third consideration let us turn to some of the characteristics of these plans.

Thirty plans have reported information in sufficient detail to permit classification according to some of their characteristics. All of the thirty plans have nonprofessional boards of directors to handle the business affairs of the association. Fourteen plans (46 per cent) have a medical board or a physician's committee to plan and direct the medical practice. Eight plans (27 per cent) have a contract with a physician or several physicians responsible to the board to handle medical practice. Eight plans have indemnity contracts and make no definite arrangements for medical supervision.

As to facilities used, sixteen plans have their own hospital or clinics, and fourteen plans use existing local facilities. In the matter of facilities the plans are about equally divided.

The tendency toward the service type of contract for medical care predominates. Twenty-one plans (70 per cent) write service contracts; eight plans (27 per cent) write indemnity contracts; and one plan (3 per cent) writes a combination of both. As a matter of comparison,

ninety medical society plans are about equally divided among service contracts, indemnity contracts and a combination of both.

All plans depend on legally licensed physicians to render medical care benefits to their members, and all indicate that they offer freedom of choice of physicians. This, of course, applies to those co-operating with or employed by the plan.

There are, however, four distinct methods under which arrangements are made with the physicians to render medical care and receive payment therefor. The plans are about equally distributed between these four methods.

1. Eight plans provide cash indemnity payments to the subscriber for the amount of his medical bill as certified by his attending physician or up to an amount in a schedule of payments for services covered in the benefits. The patient pays the doctor and is reimbursed according to the terms of his insurance contract. These eight plans, with a total enrollment of 224,390, are divided into three urban plans with 91,834 persons enrolled, and five rural plans, with 132,556 persons enrolled.

The Hoosier Farm Bureau Life Insurance Company of Indianapolis is an example of the indemnity type. It is a mutual company, organized by the Indiana Farm Bureau, that writes many kinds of insurance for its members, including surgical and hospital expense. The benefits include surgical expense up to the amount named in the schedule but not to exceed $150. The reimbursement for each patient-day in the hospital is $5 for members and $4 for dependents. Operating room, anesthesia and laboratory services are not to exceed $25 for members and $20 for dependents.

The cost for man and wife is $28.80 and for a family including all dependents is $40.80. During 1946, 55 per cent of the annual premiums collected were paid out in claims. In order for a county to enroll, 75 per cent of the Farm Bureau members must join. Thirty-nine thousand persons are enrolled in Indiana under this plan.

Incidentally, the Grange in Indiana is enrolling its members by counties on a similar basis, except that the coverage offered is Blue Cross hospitalization and Blue Shield medical service. The Grange enrollment is included in rural enrollment of the medical service plan sponsored by the Indiana State Medical Association. Here is a consumer-sponsored organization co-operating with a medical society and a Blue Cross program. The cost for a family including dependents is $48.60 per year. The additional cost of $7.80 per year is offset by more benefits for hospitalization. The Grange in twelve other states is reported as now offering Blue Shield and Blue Cross benefits to its members.

2. Nine plans pay the physician on a fee-for-service basis for medical care rendered to members. The total enrollment of this group is 114,160 and is made up of two of the larger urban plans, with a total of 98,605 persons enrolled, and seven of the smaller rural plans, with a total of 15,555 persons enrolled.

The Southeast Missouri Health Service, Inc., Poplar Bluff, Missouri, is an example of this type. It was incorporated in December, 1941. After agreements and operating principles were developed and an education program carried on with the people, service was started to members on January 1, 1943. It is consumer and medical society sponsored, with a seven-member board of directors to manage the business, and a medical committee appointed by the county medical society to direct the medical practice and approve medical bills for payment. Both boards agree on the extent of benefits, the rates to be charged the families, and the method of payment. It is a project of the medical economics committee of the Missouri State Medical Association.

At present, farm families with earned incomes of $1,500 or less are eligible. Plans are under discussion for extending the program to urban residents with incomes of $2,000 or less. The benefits include general practitioner's care, surgery, and hospitalization in a ward-bed up to twenty-one days for each person in any one year. Prescribed drugs and children's dentistry have been included, but these two benefits are being discontinued.

The maximum family payment is $60 and the minimum, $30, to become a member, with 6 per cent of earned income used as a basis of payment for families earning between $500 and $1,000 per year. The cost of this program on the basis of normal local fees was $99.94 per family. This cost was met by payments from the families that averaged $36.44, from tax funds supplied through

Farmers Home Administration, which averaged $33.73, and from the professions an average of $29.77 per family on the basis of accepting pro rata amounts or granting discounts from their normal fees. This substantial contribution on the part of the medical and allied professions made it possible for this program to continue to operate.

The distribution of benefits paid for the year July 1, 1945, to June 30, 1946, was: for medical care and surgery, 41.3 per cent; hospitalization, 25.7 per cent; drugs, 16.1 per cent; reserves, 2 per cent; administrative costs, 14.9 per cent, or about 85 per cent paid in benefits.

3. Six plans render benefits through contracts with a small group of physicians on a salary basis supported by local physicians on a fee-for-service basis. This group has a total enrollment of 243,152 persons. It is made up of four urban plans, with a total enrollment of 231,207, and two rural plans with 11,945 persons enrolled.

Since this group is largely urban, we have selected the largest one of the plans, located in New York City as an example. The Union Health Center was organized in 1913 by the International Ladies' Garment Workers Union and thirty-two locals, and started service to members in 1916.

The business is directed by a board of ten directors and the medical director. A medical council, composed of physicans and the medical director, hire the ten physicans on the staff, work out the arrangements with 100 part-time local physicians, and direct the medical activities. Union members and their dependents are eligible to receive service.

The benefits include medical care and all diagnostic services in the clinic of the Union Health Center on a service basis for union members. Surgery and hospitalization is also provided union members on an indemnity basis. These benefits cost the individual $18, with some variations between the local unions. Dependents of union members are supplied these services on the basis of reduced fees at the time medical service is received. Our reports indicate that subscribers pay 23.3 per cent of the total costs as cash payments and 55.8 per cent as employe payroll deductions paid through the local unions. The international organization pays 20.8 per cent, with .1 per cent from miscellaneous sources to make up the balance to cover the costs. The administrative costs of the prepayment features of the plan are absorbed by the unions and the clinic. All of the funds collected went to pay for services.

4. Seven plans have organized group practice with physicians on salary. All of these plans own their facilities. This group of plans have 36,804 persons enrolled. Two are urban plans with a total enrollment of 20,848, and five are rural plans with a total enrollment of 15,956.

As an example of this group, I wish to discuss the Farmers Union Hospital Association at Elk City, Oklahoma, organized in 1929 by the Farmers Union and Dr. Michael A. Shadid.

A board of five directors, elected by the membership, and Fred V. Shadid, M.D., medical director, manage the business and control the property of the association. A medical staff of six medical doctors and one dentist, together with the medical director, plan and carry out the medical practice, select the professional staff members and plan the budget required for benefits covered.

The benefits include medical care, surgery and hospitalization at the association's hospital. Extra fees are charged members for certain services. This extra fee for anesthesia and operating room is $20 for major operations and $10 for minor. Three dollars per day is charged for hospitalization and $3 for x-ray, et cetera.

The annual dues for a family including children is $34 and $6 additional for each dependent blood relative included in the certificate. In order to be enrolled as a member of this plan, each family must purchase a lifetime membership of $50 to apply on hospital cost and equipment.

The administrative costs of the prepayment plan are absorbed by the hospital and the Farmers Union.

Of these four types of payment arrangements discussed, the largest number of persons are enrolled under the one with full-time medical and clinic direction in co-operation with local physicians in carrying out the benefits of the plan. The one supplying medical service on an indemnity basis is the second largest, the one where local physicians co-operate on a fee arrangement is the third in size, and the one organized on a group practice basis is the smallest, having enrolled about 6 per cent of the total persons covered in these plans.

The consumer-sponsored plans are gradually undergoing revisions based on their experiences. It might be well to attempt here to enumerate some of the general characteristics and the trend of revisions observable.

1. Voluntary prepayment health service as distinguished from compulsory.

2. Variations in types of plans based on local determination.

3. Development largely with special groups in industry and on farms, which groups are faced with a health service problem which they think is not otherwise being met.

4. More or less flexible and have no fixed pattern or standards at present.

5. Trend toward more or less complete health benefits on a service basis.

6. The majority, even though they may operate on a different basis now, seem to favor group practice by physicians although their real interest centers on obtaining the service of specialists.

7. Establish own facilities in areas where there is a shortage of hospitals and clinics.

8. Lean toward salary or contractual arrangements with physicians.

9. Avoid the corporate practice of medicine (which is illegal) by "arranging to furnish medical care" for its members and not "guaranteeing to furnish the service."

10. Seek the co-operation of physicians and welcome the prospects of some type of standards being developed.

Where then "can the local health co-operative fit into the voluntary prepayment medical care movement?"

With so many local variations and personalities, it seems that "the place where they fit" requires local determination.

The jig-saw puzzle—as Charlie Crownhart has called the various types of prepayment medical care plans—needs to be fitted together. The co-operatives are part of that puzzle.

The physicians constitute the most logical group, if not the only voluntary group, which may be looked to as sufficiently interested in the puzzle of prepayment medical care and as capable of bringing it into a unity of purpose on a community basis.

DISTRIBUTION OF GENERAL PRACTITIONERS AND SPECIALISTS

(Continued from Page 746)

The other thing that specialty boards might consider is that in some respects perhaps they are too restrictive. The American Board of Surgery, for example, requires that one limit his work entirely to surgery before being eligible for certification. If that rule had been followed in the past we would have quite a few less diplomates of their board at present, and if it is held to in the future it cannot help but influence at least the distribution of competent surgeons if not their actual numbers.

In the latest volume published by the South Dakota Historical Society there is a biographical sketch of Dr. Theodore F. Riggs of Pierre. The final paragraph is a quotation from Dr. Richard W. TeLinde, chief gynecologist of Johns Hopkins Hospital: "I have known Dr. Riggs for twenty-five years, and he is an outstanding surgeon, in fact, I know of no one who does better general surgery in the broad sense than Dr. Riggs. The State of South Dakota can feel very happy that a man of Dr. Riggs' training and ability chose to spend his life in a frontier community rather than stay in one of the large cities. Since having a short professional association with Dr. Riggs twenty-five years ago, I have sent him an assistant from the Johns Hopkins Hospital almost every year. I happen to know that each one of these assistants regards Dr. Riggs as highly as I do." Dr. Riggs, of course, is not interested in becoming a diplomate of the American Board of Surgery, for he already is one. On the other hand, he would no doubt readily admit that his practice is not strictly limited to surgery, and so as of this day he would *not* be eligible to become a diplomate.

Some of the above suggestions may sound a little idealistic, but in this atomic age of international confusion and disillusionment we could all do much worse than attempt in every way to elevate our profession further and further toward the ultimate goal of American medicine: "The best medical care, made available to all the people—not only of these United States, but to all the world."

THE NEBRASKA STATE MEDICAL ASSOCIATION'S FEE SCHEDULE FOR PUBLIC AGENCIES

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IN NEBRASKA, we are interested in our problem of public relations. We are particularly interested in the problem of the relationship between public agencies financing medical care and the medical profession. By public agencies, we mean agencies using funds derived from taxation and agencies directed by government. We are also interested in private agencies who enter the medical field, but these relations are largely private and will, to a very considerable extent, be influenced by our relationship with public agencies.

These agencies are on national, state, county, and local levels. They have, during recent years, been requesting an ever-increasing amount of medical service. In Nebraska, the profession has been asked to co-operate with public agencies to provide medical care for the categorical assistance group—old age assistance, aid to dependent children and blind; for vocational rehabilitation, maternal-child health, workmen's compensation, crippled children, veterans' aid, veteran out-patients, county and city indigents; and for inmates of city and county jails.

In every instance, these requests could be reduced to contain two fundamental questions. How can we best contact a large number of physicians for employment and *how* should they be paid? In the past, the profession in Nebraska has had no plan for dealing with these important groups.

Lacking such a plan, agencies have, of necessity, prepared plans for their own particular use. Naturally plans vary greatly. Various agencies employ physicians in various ways. These agencies pay various amounts. In the past, many agencies have employed physicians on full or part time basis. For the most part, salaries have been inadequate, considering the amount of work required. This, of course, has held taxes down but has led to inadequate services. Of recent years, these agencies have requested a more general employment of physicians. There seems to be a decreasing objection to free choice of physician and fee-for-service pay. There has come to exist in Nebraska a desire for a "fee schedule." This desire has repeatedly been expressed by members of our association and agencies, both public and private, interested in providing medical care. In general, the thought has been that a "fee schedule" would result in uniformity and fairness of fee where confusion has existed. A "fee schedule" should include a sufficiently complete listing of medical procedures to make it serviceable in the many fields where it would be used, together with fees that would be fair and average. Fees paid from public funds certainly should not exceed the usual fee in the community for private patients. Such a schedule should be acceptable to physicians and to those responsible for paying. Its general use by agencies, governmental in particular, would have many obvious advantages; and such a schedule should come as an effort of the medical profession.

Our state agencies now pay varying amounts for similar services. County fees for medical care differ to a ridiculous degree. These schedules, for the most part, have been prepared by laymen representing the agency, together with a physician or physicians employed by or particularly interested in the agency. The medical society or the profession in general has not been consulted.

In many instances, these schedules have been fair and just, seldom have the fees been excessive, and often they have been too low. When the fees are too low, doctors may react in several ways. In case the recipient is indigent, the physician, with few exceptions, accepts the responsibility and renders adequate service regardless of fee. The feeling of responsibility to those unable to pay has always been strong in the minds of physicians, although it is unreasonable to expect this responsibility for the community.

In other instances, physicians react in a less honorable manner where small fees are paid. Often devious methods are used to increase the fee. Mileage is charged for each call although several calls are made on one trip. Taking the temperature and blood pressure is called a com-

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plete physical examination. Where small fees are paid for physical examinations, the examinations are likely to be worth very little. One agency paying a two-dollar fee requests a history, physical examination, including examination of heart, lungs, abdomen, nose, throat, vision—near and distant, with and without glasses—hearing, blood pressure, various measurements, and urine analysis, with ample space for confidential information which will be held in strict confidence.

Often the recipient, under ordinary circumstances, is the physician's private patient. Here the physician usually renders adequate service, and accepts the reduced fee to avoid embarrassment. Also, often the number of cases treated for an agency are few, and the course of least resistance is to do the work, accept the small fee and not make a fuss.

One question that constantly offers agencies difficulty is that of deciding just what a given medical service implies. For instance, what is a physical examination and what is a fair fee? This, of course, depends on the complexity of the problem which the patient presents, on the ability of the physician to deal with it, and on his desire to do so. Likewise, surgical and other procedures vary much but offer somewhat less of a problem.

This confused state is not alone the fault of the agency; the medical profession has failed to offer constructive leadership. Our medical schools and medical societies have grooved us to a certain pattern. This pattern emphasizes doctor-patient relationship. We must think more about well people and what well people think of us—in particular, what large groups of well people think. It is the well people who make the laws. Our public relations must be improved.

Painful as it is to admit, we *must admit* that a small minority of our profession are dishonest. They strive to get the most and do the least where a third party pays the bill. How to work this third party into the picture is our question. We have not wanted him, but society says he must be there. We must provide leadership and must discipline our own ranks.

With these problems in mind, the 1944 House of Delegates of the Nebraska State Medical Association instructed its planning committee to prepare a "fee schedule" with the hope that it would be uniformly used by agencies paying for medical care from public funds. This was definitely not to become a "fee schedule" for private practice. You would not benefit by a long tabulation of our ups and downs in this effort. However, some steps in the completion of this schedule should be related.

We considered a schedule complete over a year ago, only to find it lacking in some important respects which caused us to discard it, although preliminary printings had been made. We have held numerous deliberations with general practitioners and specialists from various parts of the state. We have been mindful, in particular, where special groups have set up "fee schedules" either on state or national levels. Many schedules from other states, particularly adjoining states, have been reviewed, and an effort toward conformity has been made. Several agencies have already used the schedule in various stages of its development, and its shortcomings have been noted and plausible changes made. It has been through the grind of negotiations with the Veterans Administration. While our state association does not have a completed contract with the Veterans Administration, as far as we know, the schedule has not been an objectionable feature to officers of the administration. Also we should state that the system of numbering, much terminology, and other features are those used by Veterans Administration. Some of our fees are higher and some lower than those of surrounding states. Likewise, our schedule varies somewhat from Veterans Administration schedules as used in other states. These differences for the most part are only slight.

Any schedule which will serve for all the various agencies and various localities cannot be brief or simple. The number of procedures must be large. A system of numbering must be used which will make future necessary alterations possible without disturbing the whole numbering system. For convenience, certain procedures are listed in more than one place. Also for convenience, the first part of our schedule is a rather short list of commonly used procedures, followed by a more lengthy and complete list.

A most difficult problem has been that of fees for specialists. The difficulty is in particular that of *who* is a specialist.

The profession in Nebraska is at this time unwilling to accept wholeheartedly American Board members as the only specialists. The dis-

tribution of certified board members is not sufficiently wide to serve all parts of the state. We must have some answer. While certification is our best answer, a specialist must not be too rigidly defined at this time.

A "fee schedule" should have a feature of flexibility. A schedule could be much more simple if this flexibility were not required. Various conditions exist in different agencies and in medical practices in various parts of the state. Some agencies in certain counties do not have sufficient funds to pay other than limited fees at this time. Federal funds are less limited, and the state, due partly to Federal matching, is also less limited. Also it is not inherent in people to be uniform. Regardless of income brackets, families vary greatly in how they wish to spend their money. Some spend much for home, some for entertainment, and some a relatively large proportion for medical care. Flexibility must be a feature if this schedule is to endure general economic changes. A fair fee for 1932 is not a fair fee for 1947. We have certainly not reached the goal of an honest dollar.

This "fee schedule" provides flexibility by use of a unit system. Every reasonable effort has been made to establish a proper relationship for the various services. This relationship is expressed in a number of units. Without doubt we have made errors in establishing this relationship. Much just criticism could be offered; but only time, experience and co-operation will correct these errors. This matter of relativity is the fundamental foundation of any "fee schedule." Changing trends and methods of practice will indicate futher change. A procedure which is difficult and time consuming today may be made relatively simple in the future, and thus justify a smaller relative value and smaller evaluation in a smaller number of units and thus a lower fee. With the various procedures expressed in units, the whole schedule can easily be adjusted to the various circumstances without disturbing its fundamental relative values. Many will object to the unit system as too complicated and as unnecessary.

However, we must keep in mind that there are three steps to arriving at a just fee. First, what service was rendered; second, what is a fair relative value in relation to other services; and, third, what is the ability to pay in these times. Where only two parties are concerned, the patient and doctor, the matter is relatively simple. Where three parties are involved, the patient, the doctor and an agency, complications are more likely. Much good surely will come if we of the medical profession take constructive leadership in providing a workable system which has both a feature of advantageous uniformity and necessary flexibility. At the present time, it is considered practical to place the value of the unit at 10 cents. The amount of this fee is included in this schedule.

Any doctor or groups of doctors are, of course, free to make agreements with the various agencies; however, we are urging our members to use this "fee schedule" in dealing with public agencies. The value of the unit can be adjusted to any level by the doctor or doctors and the agency. It may be changed by them from time to time, depending on the various factors.

One of the present committees or a new committee of the state medical association should serve as a clearinghouse for this effort. They should receive at state medical headquarters information as to contracts and placing or changing of unit value. They should receive suggestions of all kinds from doctors and agencies. In particular, they should receive suggestions as to changes in the relative value of various services, that is, a change in the number of units credited for the services. The committee should analyze and digest this material. Annually they should report to the House of Delegates. Their report should include suggestions in regard to changes in the unit value for various services.

Then the House of Delegates should have the sole responsibility and authority to change unit values. The planning committee is suggesting changes in our by-laws which will put this into effect.

Another step which would have many advantages would be that of uniformity in the blanks used by the various agencies. There is no reason why a small and a proper assortment of blanks would not fill all needs. Familiarity with a blank on the part of the physician makes for better and more prompt reports. Familiarity with all the present blanks is impossible. Only preliminary steps in this have been made. Also a uniformity of requests for service and methods and time of payment should be part of the plan.

We must be ever mindful that, while we want

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A PLAN FOR ESTABLISHING LOCAL HEALTH COUNCILS

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THE Interprofessional Association of Iowa, composed of physicians, dentists, veterinarians, nurses and pharmacists, was organized thirteen years ago for the purpose of promoting better interprofessional relations. Recently the executive body of this organization felt that, in the light of national developments, we must in some way contribute also to better public relations for our professions. We realized the truth of the statement that in order to encourage better public relations, our organizations must first do good, then tell the world about it. There is no question that our professions are doing good, but most of the people don't know or are badly informed about what we are doing. Last winter the division of health education of the Iowa State Department of Health, which has a full-time traveling director, came to us and solicited our cooperation in a plan for conducting health forums throughout the state. This seemed to be the opportunity we were waiting for, and accordingly we accepted the suggestion to pool our efforts and facilities toward health education, because recent public polls have indicated that the public is more interested in health topics today than in anything else.

All good citizens are interested in the health and welfare of the people in their community. Individually, the layman pays little attention to good health until he loses it, and then he fights to regain what he has either lost or is about to lose. But collectively, every community has a certain group of public-spirited citizens who are continually seeking to improve the conditions for their neighbors, and many organizations have health committees, but these health committees, in most instances, are working in opposite directions. Their efforts need correlation and unified direction.

Last winter the Iowa Interprofessional Association and the Iowa State Department of Health discussed the possible projects and activities that might be adopted for promoting better correlation in health activities, and all in attendance agreed to the facts stated in the preceding paragraph. Health education in a specific, concrete, controlled form was pointed to as one of the needs for the average citizen in Iowa.

There was also a feeling among those present that specific contributions on the part of the membership of the Iowa Interprofessional Association toward a unified plan of health education would bring the professions so represented closer together and would impress upon the public their desire to help in solving health problems from the community point of view as well as from the professional service angle.

After a thorough and complete discussion of the possibilities of uniting the efforts of both the Interprofessional Association and the Iowa State Department of Health in the work of health education, it was agreed that such a plan would accomplish much, particularly since the health department was already set up to do such work and the Interprofessional Association had the talent to supplement such a program.

The purpose was to bring to the citizens of the state, facts that every layman should know, to answer the questions many individuals have regarding health, and to clear up many of the misconceptions that are current among the laity. Through the correlation of our efforts, this service would be possible.

The following steps were taken in the original plan, although occasionally in its execution a readaptation of procedures has to be made to fit the needs of the local community and the area in which the health education forum is to be presented. For your information, however, we present the original idea.

A definite community is selected for a health education forum based upon the interest of the local citizens. The director of public health education of the state health department, who does all the work of promoting and organizing the program, pays a visit to that community and discusses with the local leaders the opportunity for having a health education forum. During this visit those present are informed by the director that the Iowa Interprofessional Association, composed of doctors, dentists, veterinarians, nurses and pharmacists, is co-operating with the Iowa State Department of Health, and both of

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Dr. Sternagel is a member of the Executive Council of the Iowa Interprofessional Association.

these agencies are ready to supply speakers for any community health meetings they may have in mind. For this purpose they are given a list of about fifty subjects to choose from. The committee then selects the topics they desire to have discussed.

This local committee is then given the responsibility of selecting the place for the meeting, supplying ushers, and taking care of all publicity except radio announcements, which are made over the area through the radio program facilities of the state department of health. The committee is encouraged to realize it is up to them to secure a large attendance for both the afternoon and evening sessions.

The program usually is presented in two parts, at 2:30 p.m. and again at 8:15 p.m., three half-hour talks being presented at each session. After each half-hour presentation there is opportunity for questions to be asked by members of the audience. The chairman is instructed about his duty to see that these question periods are conducted properly and that so-called "crackpots" are not permitted to carry the discussion too far from the subject at hand. The sessions usually last about two hours in the afternoon and two hours in the evening. Our afternoon audiences have been much smaller, and experience has proved that it is possible to get more interest, particularly in the questions, during the evening session.

In our experience we have found it better to have just an evening program with three half-hour talks, if the local committee so elects, because the afternoon meetings are, as a rule, poorly attended. Some communities definitely want an afternoon session for the women who cannot come out in the evening, and when this is the case, we try to furnish subjects that will appeal to women.

In some instances high school seniors have shown a desire to attend the afternoon sessions, and for these communities, speakers are chosen who would be most likely to carry an appeal to both high school seniors and adults.

A special point is made of encouraging speakers who take part in the forums to use lay language which can be understood by the entire audience. After the local committee selects the subjects from the list of topics available, the state society of the profession submitting the selected topic is notified by the director and requested to name a speaker, preferably from the area where the forum is to be held. For example, if the topic is rheumatic fever, the state medical society is notified and asked to designate a suitable physician to discuss the disease. The director then contacts the doctor and supplies him with all the details for his appearance, the date and place of the meeting, and such other information as may be necessary for the occasion. Insofar as possible we try to schedule addresses by medical men in the evening so as not to take them away from their practices during the day.

Every effort is made to enlist the co-operation of local lay individuals. The plan is to let them "carry the ball" in this effort to bring health education to the citizens of the community. We do not believe it wise to let the lay individuals feel that the medical society or its allied professions are attempting to impose the program upon the public. If the local group wants to take the lead and will do the proper advertising and lay the proper groundwork, we will furnish the program.

In this respect we have two philosophies: In our original plan, we attempted to get the presidents of every organization in the community to attend, with their secretaries, or send representatives to an over-all planning meeting at some date well ahead of the proposed forum. In some of the communities we have found that this leads to divided responsibility, and unless you can get an enthusiastic "spark plug" in the community, the possibility of "everybody's business being nobody's business" will contribute to a lack of organization and planning or a small audience. For this reason, sometimes it is better to secure a large, enthusiastic, responsible organization in the locality to take the lead. If, for instance, we select an enthusiastic city Parent-Teacher Association Council, made up of a large number of local parent-teacher groups, to sponsor the meeting, it is better than to attempt to secure a number of different organizations for the same purpose. The choice of procedure, however, should be based largely upon what is learned about the community before the anticipated forum is scheduled.

In the State of Iowa, as well as a good many other states, there is a definite movement for the organization of health councils which would abbreviate a lot of the work needed to organize a

forum every year. These health councils should definitely have the support, interest and cooperation of the various organizations that are members of the Interprofessional Association, for they need the guidance of the trained workers in medical and associated professions, without which they cannot accomplish their purpose with any degree of efficiency. Therefore, on the back of each program given out at the health education forums we urge the community to consider the possibility of organizing a health council as the best means of bringing together all the health workers in the community.

If the chairmen of the various committees in the community are brought together to discuss health problems, there is a future possibility that they can very well form the nucleus of a health council. However, it is highly important that representatives of all the organizations in the Interprofessional Association, who live in that area, become a part of the health council and lend their support and interest through personal attendance. This presents a problem within our own organization, which will require a lot of effort on our part to get our members to realize and act on this responsibility in the plan. It would not seem advisable, however, that these men take the complete lead, as this might be misunderstood. But it certainly is highly desirable for them to sit in on the plans and become a part of the community or county health council.

We would like to point out that at each and every one of these forums the director should specifically make the statement that all the organizations in the Interprofessional Association and the state department of health are tremendously interested in community welfare, community health and community betterment; and that these organizations are presenting this health education forum because of their interest in the community. The audience is informed that the local members of the various organizations in the Interprofessional Association are happy to work with the community groups for health improvement through techniques adopted by the health council, and that they are desirous of being called upon to sit in on meetings and given opportunity to be of assistance.

It should be pointed out that there is no expense to the local community for any of the services. The organization and contact work is done by the director of public health education of the Iowa State Department of Health. Expenses of the speakers from the Interprofessional Association are borne by their respective organizations, and, likewise, speakers and the director from the health department are paid for by their own agency.

COMPLEX SIMPLE FRACTURE

To the Editor:—Realizing that the term "simple fracture" as generally defined is thoroughly inadequate to describe the trauma received in many so-called simple fractures, I have added a new definition to the simple and compound fracture nomenclature, i. e., "complex simple fracture" (Key, J. A., and Conwell, H. E.: The Management of Fractures, Dislocations and Sprains, ed. 4, St. Louis, C. V. Mosby Company, 1946, pp. 41-43).

A complex simple fracture is a fracture which is not compound but which has received severe trauma to either or all of the surrounding soft structures, i. e., skin, muscles, blood vessels and nerves. The bony fragments usually are displaced to a marked degree.

"Complex," as defined by "Webster's New International Dictionary," unabridged, is as follows: (1) an assemblage of related things; (2) a whole made up of complicated or interrelated parts.

The complex simple fracture should be further described as to the type of bony injury, for example: complex simple fracture (transverse, comminuted, spiral or oblique, as the case may be).

Through personal contacts and correspondence with the personnel of the three National Fracture Committees (American Medical Association, American College of Surgeons and American Academy of Orthopaedic Surgeons) with reference to their opinions and the necessity for such new fracture term or definition, there was unanimous agreement that such a definition of complex simple fracture was a necessary one and should be generally accepted and used in its broad meaning.

I make an appeal that this new fracture definition or its relative equivalent be used by the members of the medical profession. Besides expressing more adequately the pathologic process in such type fracture it will mean improved records for the hospitals and convey a better description of the fracture to the insurance companies, compensation boards and other related agencies, thereby being of much help to the patient, the physician and every one concerned.

I will appreciate any opinion or suggestions relative to the foregoing.—H. Earle Conwell, M.D., Birmingham, Ala.

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MEDICAL ORGANIZATION AND SOCIAL PROGRESS

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IT is unusual for the president of a state medical association, particularly a new president—I became president in October—to suggest or even intimate or insinuate that administrative organizations of the society should be modified. To be asked—indeed, to be invited—to discuss such changes is exceptional. I suspect that there may have been some element of humor at my expense in scheduling me as a streamliner of the organization. However, I might say that I, too, can enjoy the sport of it, and it was more in the spirit of challenging you and of getting your reactions to the opinions of a fledgling that I agreed to talk on this subject. Without this spirit of comradery, I believe I would be frightened at the task which the subject sets for me. So, with somewhat of a sense of humor at my predicament, I have the temerity to make some comments on reorganizational changes for state medical associations.

You will understand that my remarks are predicated upon Wisconsin experience only and therefore may not be at all applicable in other states. And, also, it must be said at the outset that the idea that some helpful change might be devised in the methods by which doctors approach the many and important problems which confront them has been considered for some years past by many of us, and, also, that the suggestions here made are not altogether my own. All that I say is compounded from contributions made by the councilors, the secretary, Dr. Dawson, our president last year, and many others.

From my own observations I should like to point out a few of the things that to me would contribute a better understanding of what the problems of medicine are. It has seemed apparent to me that the committee structure of our association has grown up like Topsy, or possibly I should say like various committees, boards, and commissions that have been added to the various divisions of our government at all levels—county, state, and national. This has occurred as the result of colliding with all sorts and kinds of economic and social problems, creating intraprofessional, interprofessional and nonprofessional differences of opinion and strife. These collisions have usually been sudden, that is, unexpected, and the immediate effect is the organization of another committee to solve a problem that no one knows very much about and which has taken everyone by surprise. After the committee or council, or whatever the designation, has once been created, it stays on forever and continues on the records as an active committee whether or not it is active. And sometimes, it seems to me, they meet and report whether or not they have made any special study or investigation of the subject with which they are concerned. In this way the committee structure piles up year after year until the system becomes an octopus of committees, many of which do not formulate their opinions from expert knowledge.

It is further my opinion that this has occurred because of two things: first, our failure to anticipate what the future may hold for us, and therefore our failure to plan to meet the oncoming situation; second, the preoccupation of physicians with their own affairs, until they are detracted and then distracted by the reverberations of public conflict over affairs in which they suddenly find that they have a vital interest, not only from a professional point of view but from the point of view of a citizen.

A good historical background and acquaintance with current advancing knowledge supply the material for the construction of watchtowers from which future events can be visualized, and form the ingredient with which wise plans to meet these events can be constructed. Much of the discordance, discontent, disturbance, and disagreement in the profession could have been avoided or greatly modified by wise planning from a knowledge of the historical background.

We are not in our present upheaval by accident. Great trends in human affairs grow out of the past like a tree grows out of the soil. The science of disease control and prevention has moved in one direction, from environmental sanitation to the treatment of the individual—even "he that runs may read."

Read at the North Central Medical Conference, November 23, 1947, Saint Paul, Minnesota.

Dr. Stovall is president of the Wisconsin State Medical Association.

All affairs—governmental, private, or voluntary—that are operated by democratic methods are congenitally slow moving and react ponderously to change and have the reputation of being cumbersome and ineffective. I have no doubt that these qualifications prompted the statement, "Free government is better than good government." All of us agree to the sense of this statement, but certainly we cannot agree with all of its implications. Free government is certainly far better than good government if good government means the loss of freedom. However, the implication that free government cannot be good government, we cannot and do not readily agree to. Since our societies are democratic organizations, they do have some of the genetic defects of any such system.

Colliding with complex problems instead of planning to prevent them is, no doubt, one manifestation of the awkwardness of free and democratic institutions. But is it not possible to improve this awkwardness without losing the freedom we want within the organization? Do we admit that free and democratic institutions cannot be improved to meet a changing world? I for one think that improvement can be effected by effort and interest, and that free and democratic organization can be made to operate in a superior and a superlative manner. In my opinion this is essential to the preservation of free institutions and to the preservation of the dignity of the individual.

Preoccupation with professional concerns is a great obstacle for physicians in devising an organization to meet present-day needs. Physicians have enough to absorb their time and attention. It is easily understandable that they shun and shy away from participation in outside activities. Their preoccupation with medicine interferes with obtaining a familiarity with problems of public concern and other matters which so profoundly influence methods by which a complex system is organized, and which determine the problems which such organizations bring to the profession. It is necessary, however, if physicians are going to prevent collision with ideologies that are inimical to good medical practice, that they become informed about the concepts upon which these ideologies are grounded and with the technical practices to which they eventually lead.

In brief, these are some of the considerations which encouraged me to suggest some changes in the medical organization of our state to meet certain economic and social problems resulting from increased medical knowledge. After a review and consideration of some of our immediate problems, it seems to me that they call for only a few very well defined activities, each one, of course, being composed of a great many details which require careful study before their significance can be wisely incorporated into our way of life. These activities might be carried out under the following headings:

1. Medical education and hospitals.
2. Scientific work and postgraduate study.
3. Budget and finance.
4. Public health and governmental activity.
5. Economics, medical service, and public relations.

If one follows the proceedings of the House of Delegates year after year, it will be seen that these five subjects cover quite completely the problems that are brought to that body. And if one has followed these proceedings, it must be apparent that many resolutions come before the House which bear on matters, the historical background and current developments of which have not been given studious consideration. As an illustration we can use medical education. At the present time there are conflicting ideas on what can be done to encourage young physicians to choose the general practice of medicine instead of some special field of practice. A committee of the state medical association should be appointed to study this problem and bring back to the councils of the society definite recommendations, after careful study of the historical development of medical education in this country and the factors which are influencing present trends. It has been said that the tide cannot be swept back; this we believe, but if we are prepared we can ride the tide out and enjoy the ride. There isn't time for me to carry these illustrations further. There isn't time for me to discuss each one of the items that I have suggested as suitable for committee or council work, but I would like to say what we have done in Wisconsin.

At the last meeting of the House of Delegates I asked for authority to appoint a committee to study the committee structure of our state medical association, and to report back to the House of Delegates the results of their findings. I feel that we need a very strong and active committee structure, because I have seen how excellently

the various councils of the American Medical Association work and because the Council on Scientific Work of our own medical association has so successfully handled the scientific affairs of our society. I have been encouraged to believe that, in our organization, five councils of fifteen members each, each member to serve a period of five years, with a chairman to be appointed by the incoming president, would provide a mechanism for definite study and deliberation on these problems, whereby knowledge and advice would form a basis for critical action by the House of Delegates. This does not mean that the incoming president would change the chairmanship, but he could. The chairmen of these five councils would act as a cabinet for the president. It might be said that the committees are too large. The thought is that each council may divide itself up into subcommittees, assigning various problems to small groups. This seems advisable because each member of a committee cannot, in the time at his disposal, familiarize himself well enough with all the subjects which would come before the council to provide an expert opinion.

By a division into smaller groups it is possible, however, for the individual groups to become well versed in restricted fields of knowledge. Since it has become popular to be critical of continuous service over a long period of time, it may be said that the period of service of each committee member is too long and that the restriction of the number of councils or committees reduces active participation in medical society affairs to a small group. The size of these committees precludes that, and the appointment of new members each year to take the place of those whose terms expire would be drawing new personnel into the committees. They would pass out into the ranks of the membership to become leaders. This process in a few years should build a strong society of critically and constructively thoughtful members.

I am so convinced that the maintenance of a free government depends upon a strong local leadership that I think one of the chief functions of a state medical association is to develop leadership among its members. This can be done only by giving them responsibility and allowing them to become informed in certain subjects. In this way alone will the profession be able to influence public opinion, after careful deliberation on well-considered subject matter rather than by whim or fancy. Curti, in his book, *The Growth of American Thought,* refers to Beard's plea that those concerned with human affairs distinguish between what is known and can be proved and that which is longed for and loved. We in the medical societies must also realize this, and have opinions of our own that are based upon the facts as they are, or at least the facts as we can obtain them, and boldly deny the flattery of the uninformed and those who thus plan the failure of plans of people living under a government of free people. In this way we can maintain free institutions and free people, and have good medical practice and good government as well.

EXAMINATION FOR REGULAR CORPS, USPHS

A competitive examination for appointment in the Regular Corps of the United States Public Health Service in the grade of assistant surgeon (first lieutenant) and senior assistant surgeon (captain) will be held in October. The written examination will be conducted October 4, 5, and 6 at places convenient to the candidates. The oral examination will be held at various points throughout the country.

All applicants must be at least twenty-one years of age and citizens of the United States, must present a diploma of graduation from a recognized medical school and satisfactorily pass a physical examination performed by Public Health Service officers.

Physicians beginning internship on July 1, 1948, will be admitted to the examination. Successful candidates will be placed on active duty in the Regular Corps upon completion of internship on July 1, 1949.

Applicants for the grade of assistant surgeon must have had at least seven years of educational and professional training or experience, exclusive of high school. Applicants for the grade of senior assistant surgeon must have had at least ten years of educational and professional training or experience, exclusive of high school.

Entrance pay for an assistant surgeon with dependents is $5,011 a year and for senior assistant surgeon with dependents $5,551 a year. This includes the additional pay of $1,200 for medical officers, as well as subsistence and rental allowance. Provisions are made for promotions at regular intervals up to and including the grade of senior surgeon (lieutenant colonel) and for selection for promotion to grade of medical director (colonel) at $9,751 a year. Retirement is authorized at either completion of thirty years' service or at the age of sixty-four. Full medical care including disability retirement at three-fourths pay is provided.

Application forms may be obtained from Public Health Service Hospitals, District Offices, or by writing to the Surgeon General, United States Public Health Service, Washington 25, D. C.

A REVIEW OF THE EPIDEMIOLOGY OF SCARLET FEVER

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IN 1924, when the Dicks reported their experimental production of scarlet fever by swabbing the throats of several human volunteers with a strain of hemolytic streptococcus isolated from a previous case of this disease, the scientific world had in general accepted such experimental findings as conclusive proof of the specific etiology of scarlet fever. However, since that time, new laboratory methods of differentiation between the various hemolytic streptococci have led to the discovery of so many significant additions to the epidemiology of scarlet fever that an entirely new concept of this disease has resulted. The writer therefore feels that a brief review of such developments, presented in the order of their occurrence, may provide a more unified and complete concept of scarlet fever as it is understood today, and be of help in clarifying the new epidemiological approach deemed necessary for its control.

Although fairly accurate descriptions of scarlet fever appear in the literature as early as the middle of the sixteenth century, it was Sydenham who first employed the term "scarlet fever," and carefully described the disease as it appeared in London from 1661-1675.[6] Thereafter, scarlet fever became more and more clearly defined as a clinical entity. However, it was frequently confused with diseases such as diphtheria, measles, and various other rash-producing infections. Such difficulty in its diagnosis lent emphasis to the desirability of a laboratory aid for its differentiation, and therefore served as an added stimulus in the search for its etiology. Still, for a long time, attempts at identification of such causative organism proved difficult and baffling.

Early ideas relative to the etiology of scarlet fever included protozoan, bacterial, and virus concepts. It was Mallory in 1904 and Dohle in 1912 who made the suggestion that scarlet fever was due to a protozoan infection, inasmuch as inclusion bodies were frequently found in the tissue cells of scarlet fever patients. However, similiar inclusion bodies were later found in other infections, so this idea was soon discarded.[6]

The possibility of a streptococcus as the etiological agent of scarlet fever was suggested as early as 1885 by Crook, who reported the presence of streptococci in the blood and organs of individuals dying of this disease. About this time also, Klein had succeeded in isolating a streptococcus from the tissues of scarlet fever patients and named it Streptococcus scarlatina. In 1900, Boginsky and Sommerfeld reported the constant finding of streptococci in the throats during the characteristic angina of seven hundred individuals suffering from scarlet fever. Streptococci were also frequently noted accompanying the various septic complications occurring in this disease.[6]

"Such association of the hemolytic streptococcus with scarlet fever led some investigators to propose the view that the streptococcus is the etiological agent of scarlet fever."[6] Others, however, considered such possibility as quite unlikely inasmuch as the reactions to these infections were quite dissimilar. One attack of scarlet fever seemed to confer life-long immunity, yet streptococcal infections could recur in the same individual time and time again. They therefore felt that the causative organism of scarlet fever was probably a virus, and that the streptococcus plays the role of secondary invader.

Such differences in streptococcal reaction might have been more easily understood if the heterogeneity and complexity of the streptococcal group had been more fully appreciated at that time. Though differences in the behavior of these organisms had been noted from time to time, it was not until 1918 that laboratory proof of the existence of different streptococcal strains was made available. At this time, by means of agglutination and protection tests, Dochez, Avery, and Lancefield clearly demonstrated the existence of at least four different serological types.[7]

Thus far, therefore, evidence had been advanced to show that not only were hemolytic streptococci closely associated with scarlet fever and its complications, but they were also heterogeneous in character and consisted of separate and distinctly different strains. Such evidence could easily account for both the different types of infection produced and the variability in immunity

formation. Scarlet fever, it was suggested, could very well be just one of the various streptococcal infections caused by a specific strain of hemolytic streptococcus. To definitely prove such a possibility, it was necessary to reproduce the disease through the experimental inoculation of such organism into another animal, preferably a human being.

Probably one of the earliest attempts at such a procedure consisted of the experimental production of scarlet fever in swine by Class in 1899, through the inoculation of a coccus-like organism. This organism may well have been a hemolytic streptococcus for it had been isolated by him from 300 cases of human scarlet fever.[6]

Later, in 1914, Krumwiede, Nicoll, and Pratt reported the scarlet fever infection of a laboratory worker which followed her accidental swallowing of living streptococci, containing streptococcus scarlatina. Efforts at this time to infect monkeys with the same streptococcus were unsuccessful.[6]

Still later, in the year 1921, attempts were made by Dick and Dick to reproduce scarlet fever by the experimental inoculation of human volunteers. Their efforts were unsuccessful at this time. However, in 1923, Dick and Dick, using hemolytic streptococci cultured from the infected finger of a nurse suffering from scarlet fever, successfully reproduced scarlet fever in a human volunteer by swabbing these organisms on the pharynx and tonsils. Furthermore, to assure themselves that the causative organism was the streptococcus and not a virus associated with such streptococcus, they cultured this organism in bottles of sheeps blood agar, and passed the condensation fluid through a Berkefeld V. filter. Inoculation of the filtrate did not produce scarlet fever, yet later inoculations of the unfiltered culture in the same individuals occasioned another case of scarlet fever. Such experimental evidence, the Dicks believed, satisfied all of Koch's postulates, and therefore definitely established the etiology of scarlet fever.[4]

In addition to the findings relative to its etiology, other important features of scarlet fever had been concurrently noted by various investigators. For a long time, students of scarlet fever had been impressed with the similarity of this disease to diphtheria. Thus, Berge in 1895, suggested that just as in diphtheria, so also in scarlet fever, the symptoms were due to the absorption of soluble toxins. In 1907, Gabrichewsky attributed the scarlatiniform reactions, which occured during his attempts at scarlet fever immunization, to a toxin present in the vaccine. Later, in 1918, Schultz and Charlton revealed the presence of scarlet fever antitoxin in the serum of normal adults when they demonstrated the blanching or neutralizing effect that such serum had on the rash of scarlet fever. They found the serum of about 60 per cent of normal adults to possess this blanching reaction. In 1923, Mair pointed out the significant fact that the blanching power of the serum of a child was negative if tested before an attack of scarlet fever, but became positive after such infection. Furthermore, on comparing groups of adults and children who had not had scarlet fever, he found that the sera of the adults possessed this blanching power much more often than did the sera of the children.[6] Such a finding indicated that adults may develop scarlet fever antitoxin through subclinical exposures to the organism without necessarily developing the disease. Finally in 1924, the Dicks made practical application of the above findings, and introduced the now very well known Dick test. They found that by injecting, intracutaneously, small amounts of a filtrate containing scarlet fever toxin, they were able to detect the presence or absence of scarlet fever antitoxin. Children who gave no history of scarlet fever, i.e., who possessed no antitoxin, reacted in a positive way to such infection by developing an erythematous area at the point of injection. The same test when performed on children after they had recovered from an attack of scarlet fever produced no erythematous area, i.e., gave a negative reaction. Thus a test had been provided whereby susceptibility to the scarlet fever toxin, and presumably to scarlet fever infection, could be ascertained.[5]

At this stage, therefore, it seemed that the epidemiology of scarlet fever had been practically completed. The long confused and controversial concept as to its etiology had apparently been definitely clarified. A test had been devised whereby evidence of susceptibility as well as immunity to scarlet fever infection could now be ascertained. The value of scarlet fever antitoxin and convalescent serum had already been demonstrated. By this time also, the Dicks had suggested the inoculation of graduated increasing doses of scarlet fever toxin as a method for the active immunization of susceptible individuals. Truly then, it appeared that the mysteries of scarlet fever had

been cleared, and the means for its eradication had been provided.

Careful observations, however, by students of this disease, soon revealed various discrepancies and perplexities which could not be adequately explained by the epidemiology of scarlet fever thus far elaborated. It did not explain why individuals who were Dick-negative would, after exposure to a scarlet fever case, not infrequently exhibit symptoms similar to scarlet fever in practically every detail, except that no rash would appear. Such reactions appeared to occur most often in the adult contacts of a definite scarlet fever case. Occasionally however, the reverse would occur, and the first indication of an infection in the family would be a sore throat in one of the adults, following which one or more of the children would come down with typical scarlet fever.

Confusion also presented itself in the consideration of milk-borne epidemics of sore throat. Since 1900, epidemics of septic sore throat had been considered by the majority of physicians as comprising a clinical entity. Davis, in 1929, reiterated his claim that the streptococcus isolated by him in 1912, from a milk-borne epidemic of sore throat, was a distinct species. This organism, which he called *Streptococcus epidemicus,* he believed was the sole cause of this disease. On the other hand, Smillie had observed in 1917 that in many septic sore throat epidemics, scarlet fever cases also occurred, and that both types of cases might be traced either to cases of scarlet fever or to septic sore throat. Outbreaks of septic sore throat, therefore, had, from time to time, been reported as giving a varying clinical picture; and scarlet fever, as well as erysipelas and other septic conditions, had been observed in the same epidemic.[13]

Further perplexities in the understanding of scarlet fever, which could not be explained at this time, arose from the fact that the clinical picture of this disease seemed to vary considerably on different occasions. Typically, the clinical picture of scarlet fever, consisting of a sore throat, high fever, nausea, vomiting, and a fine punctate rash, which was later followed by desquamation, was unmistakable and easily diagnosed. However, every now and then, cases would occur so mild and atypical in character that diagnosis at times would be almost impossible. Such cases might display only a very mild fever, little or no sore throat, and an almost negligible rash which might last only for hours instead of the usual three to seven days.

Clarification of such problems and confusing situations, was made possible only by the development of more specific laboratory methods for the differentiation and detailed classification of the hemolytic streptococci.

Though attempts at streptococcal classification had been made by a variable number of bacteriologists, the methods as suggested by Lancefield and Griffith seem to have been found most reliable, and have therefore been most widely accepted. It had long been known that the hemolytic streptococcus did not confine itself to the invasion of man alone. Attempts, however, to differentiate the streptococci, in accordance with their sources and their variable pathogenicity, had not heretofore been too successful. Fairly adequate methods for distinguishing the human from the nonhuman streptococcal pathogens had been attained by the use of various biochemical and cultural reactions. Such methods were, however, neither complete nor as specific as might be desired. It was not until 1933 that a new and specific method for such differentiation was made possible. At that time, Lancefield came forth with a precipitin reaction by which she was able to divide the hemolytic streptococci into several distinct groups.

"The precipitin test," she stated, " is dependent on the presence in streptococci of substances characteristic of the large groups, although not specific for the types within the groups."[15] By precipitating or extracting such substances from the bacterial cell, she was better able to reveal the serological differences that existed between the various groups of streptococci. Thus, hemolytic streptococci of human origin were found to contain a carbohydrate called "C" substance, which is not type specific and yet is not found in strains from sources other than man. Further experimentation revealed that similar carbohydrate substances were also to be found in the other streptococcal groups. These substances, although chemically related to the "C" substance of the human group, were serologically different and therefore specific only for its own particular group. On the basis of such serological differentiation, the hemolytic streptococci were at first divided into five groups, and at present are divided into at least nine different groups. They are listed as A, B, C, D, E, F, G, H, and K.

Group A was found to comprise strains chiefly of human origin, and with few exceptions, contained all of the human pathogenic strains.[15]

Attention has therefore been centered primarily on this group, and methods for its further division into its component strains or types have been carefully studied. Here again, Lancefield pioneered, for in 1919, together with Dochez and Avery, she had initiated the first systemic classification of hemolytic streptococci of human origin.[7] Later, in 1928, she demonstrated the presence of a type-specific substance of protein character in the hemolytic streptococcus which she called "M" substance, and by a precipitin technique separated a number of immunologically distinct types.[16] About this time also, another improved method for the differentiation of the human streptococcal pathogens was developed by Griffith. This method consisted of slide agglutinations of the various hemolytic streptococcal pathogens with absorbed antisera, i.e., before agglutination with the unknown organism is attempted, each antiserum used is absorbed with a suspension of organisms made up from all of the heterologous types. By such method, Griffith was able at that time to distinguish more than twenty serological types of hemolytic streptococci.[12] At present, with the aid of both the Lancefield and Griffith methods, the hemolytic streptococci of group A have been divided into at least forty different types, numbered as types 1, 2, 3, 4, et cetra.

Introduction of such improved laboratory methods to the scientific world led to new attempts at the isolation and specific identification of the organisms present in the various streptococcal infections. Consequently, a vast amount of new facts has been gathered—facts so radically different from previous impressions that an entirely new concept of scarlet fever and its associated streptococcal infections has resulted.

Cultures of scarlet fever patients, when examined by these new methods, uncovered data that definitely proved the belief of the Dicks and others, relative to the specific etiology of scarlet fever, to be erroneous. Thus, as early as 1927, Griffith, on identifying the organisms of 60 per cent of the scarlet fever cases occurring in Great Britain, was able to show that at least four different types were involved.[9] Reports from investigators in other countries soon revealed that still other types were to be found in this disease. In fact, Schwentker has recently noted that all known types of group A have at one time or another been recovered from Scarlet Fever cases.[22] Generally, however, it was found that during epidemics, only a few streptococcal types tend to predominate, but that these types differ from place to place and from season to season.[9]

Likewise, investigators now dispelled the belief that other hemolytic streptococcal infections, such as septic sore throat, erysipelas, or puerperal sepsis, were specific in their etiology. It was now found that the same organism which would cause scarlet fever in some individuals might produce a septic sore throat in others, while still in others it might occasion erysipelas or puerperal infection. Careful studies indicated that just what happened when hemolytic streptococci attacked an individual was determined by at least three factors: (1) the resistance of the host, (2) the site of the implantation, (3) and the characteristic properties of that particular hemolytic streptococcus. An analysis of each of these factors should therefore be considered at this time, if their manner of operation and resultant effect are to be clearly understood.

A study of the hemolytic streptococci has shown that their pathogenicity is dependent not only upon their ability to produce erythrogenic toxin but also upon their ability to invade tissues. A detailed study of the invasive properties of these organisms indicate that such abilities are occasioned by the capacity of the streptococci to synthesize and elaborate a number of substances that react with human tissues. Some of these substances and their effects have been identified. They include two streptolysins which lyse human erythrocytes (one of these is oxygen labile, while the other is oxygen stable): fibrinolysin which dissolves human fibrin; and hyaluronic acid, a component of the capsule of the bacterial cell, which facilitates the spreading of the streptococcus throughout the tissues.[2]

The pathogenic properties of the hemolytic streptococci have been found to vary considerably, both in quality and quantity. Thus, while some organisms might be especially invasive in character, such organisms might have little or no ability to produce erythrogenic toxins. On the other hand, the reverse might also be true, and organisms which have high toxin-producing ability might possess invasive qualities of little or no consequence. All possible combinations of the above properties were found to exist, and as such, tended to determine the type of streptococcal

infection occasioned. Thus, Evans in a recent review noted that types 3, 8, and 10 appear to be high in their toxin-producing qualities, for they were almost constantly associated with scarlet fever but rarely with any other streptococcus infections. On the other hand, types 5, 13, 14, and 18 appear to have low toxin-producing ability but high invasive qualities, for they were rarely associated with a rash, yet commonly produced suppurative and other miscellaneous streptococcal diseases. Types 6 and 19 were found to be associated with suppurative diseases on some occasions and with scarlet fever infections at other times. Such a combination of effects could, therefore, indicate that they possess both toxin-producing action and a high invasive ability.[8]

The type of infection produced, however, is dependent not only on the invading pathogen but also upon the resistance of the host involved. The Dicks had previously noted that individuals who were susceptible to the erythrogenic toxins, i.e., Dick-positive, reacted to the hemolytic streptococcus by developing typical scarlet fever, while others who had become Dick-negative would not develop the disease. More recent studies, however, demonstrated the fact that, though immune to the rash-producing toxin, such individuals may still be subjected to all the signs and symptoms occasioned by the invasive features of such organism. A Dick-negative individual might therefore display the symptoms of a septic sore throat if the invading organism attacked the nose and throat; erysipelas if such organism invaded the skin; or puerperal sepsis if the uterine tissues were attacked.

Consideration of scarlet fever, in the light of such new experimental data, has therefore resulted in an entirely new understanding of the disease. What had long been considered a specific infectious disease now appeared to be a disease syndrome caused by any one of a wide variety of hemolytic streptococci.[9] Such syndrome, it was found, represented the composite effect of two components, namely, an infective or invasive component and a toxic component. The infective component is responsible for all signs and symptoms resulting from the invasion of tissue. These symptoms are similar in all streptococcal infections, whether such infection be scarlet fever, erysipelas, puerperal fever, or simple angina. It is this component that is the cause of any extension of the infection to adjoining structures, and is therefore the element responsible for most of the complications occurring in scarlet fever. The toxic component, on the other hand, is related chiefly to the systemic effects, and is therefore responsible for the exanthem and enanthem, and for the reactions of vomiting, arthralgia, and albuminuria.

When scarlet fever is produced, its clinical form will depend largely on the relative proportion of the toxin-producing and invasive qualities present in the causative organism. Thus, as emphasized by Gordon, one clinical type may exist in which the manifestations are essentially toxic, still another in which the invasive qualities predominate, while a third may represent a mixture of the above two elements. The mixed form is the type usually responsible for the manifestations of typical scarlet fever, and is variously designated as light, moderate, or moderately severe. "Aside from this group of readily recognized reactions, there is a group of atypical infections of varying extent, mild in nature, and difficult to diagnose. They represent essentially low-grade invasive reactions, with the toxic element indefinite and sometimes so slight that the eruption of the skin is most fleeting."[9]

In addition to the above clinical manifestations of scarlet fever, Gordon has drawn attention to still another form of infection which is latent or subclinical. Here, "The toxic element is absent, and the invasive factor so slightly active that it leads to no clinically recognizable sign. There is clear cut evidence of the existence of this group, but little appreciation of the number of cases involved in proportion to the other two."[9]

Control

Although the present incidence of scarlet fever appears to be as great as ever, the general level of severity in this infection seems to have progressively decreased. Pope, in a review of the experience of Providence, Rhode Island, for the years 1865-1924, reports that whereas in 1886 there was one death in every five cases of scarlet fever, there was only one death in every 114 cases in 1923.[9] Woods, in 1933, showed that a similar change had occurred in England and Wales. Examination of scarlet fever fatality rates in Minnesota likewise reveals a progressive drop from a high of 6.9 per cent in 1910, to a low of .2 per cent in 1946. In most parts of the world, therefore, scarlet fever is today a mild disease,

with deaths less than 4 per cent of what they were eighty years ago.

Has scarlet fever, then, at last been subdued? Can it be that the general betterment of our health conditions, and the better medical care now available, have together been instrumental in permanently changing a fearful and highly fatal disease into a relatively mild and innocuous ailment? Possibly. Yet it is well to note that throughout the generations, scarlet fever has frequently exhibited extreme variations in its severity. Thus in the middle of the seventeenth century, Sydenham described scarlet fever as extremely mild. Toward the end of the eighteenth century, scarlet fever was again severe. Immediately after this period, the severity diminished, and from 1804 to 1816, it is again alluded to as a mild disease. However, after 1830, the disease is noted by Creighton as "the leading cause of death among the infectious diseases of childhood." Such severity apparently remained until the middle of the nineteenth century, when the present progressively downward trend began.[9]

It would be difficult to foretell just how long scarlet fever will remain a mild disease. Even during this generally mild period, scarlet fever, as well as all other streptococcal infections, has on certain occasions temporarily reverted to a form exhibiting a marked increase in severity. Coburn has shown that, both in World War I and II, a combination of factors such as a large number of susceptible recruits, a general disturbance in the living conditions of the host, and the spread of virus infections, would occasion a sudden increase in the pathogenicity of the streptococcus and thus produce intense cases of scarlet fever and other streptococcal infections.[2] It would be much wiser, therefore, to guard against the consequences of any future change in scarlet fever severity by promoting and establishing more adequate methods for its prevention and control.

The control of scarlet fever does not lie in measures directed only at the typical scarlet fever case, for, as has been shown, this group constitutes only a small fraction of all the various clinical forms of this disease. Adequate control measures should encompass all forms of scarlet fever infection and should therefore include the atypical case, the subclinical case, and even the normal carrier of the scarlet fever organism. Moreover, since all types of hemolytic streptococci have, at one time or another, produced scarlet fever,[22] and since these same streptococci may have at one time, occasioned scarlet fever and at another time produced erysipelas, streptococcal sore throat, or any other streptococcal infection, a program of prevention and control should deal with this whole group of streptococcal infections and not simply with those which show a rash.

Measures for the control of streptococcal infection must concern themselves with the factors that determine the communicability of a disease. Such factors include a reservoir of infection, a means of transmission, and a group of susceptible individuals. Eradication of even one of these elements could break the chain of communication, and thus eventually eliminate such infection. Such a procedure, however, is rarely possible. More feasible, therefore, would be a setting up of measures for the limitation and modification of these factors. If successful, such a procedure could result in a significant reduction in the incidence and severity of streptococcal disease.

Reservoir

Although the hemolytic streptococcus is capable of producing a great variety of diseases in man, scarlet fever seems to be the only one of such infections where control measures have been attempted. For generations it has been recognized that scarlet fever is a contagious disease, that its reservoir is man himself, and that its mode of transmission is primarily through human contacts. Accordingly, rigid measures were set up for the isolation of the patient and the quarantine of his immediate contacts. Such measures have usually created much inconvenience and economic distress. Consequently, many infractions of the quarantine regulations have resulted, and not infrequently attempts have been made to avoid the reporting of such cases to the health authorities. Gordon has recently estimated that less than 70 per cent of the recognizable cases of scarlet fever are registered with the health authorities.[10]

In addition to this number of unreported typical cases, we find that there are many atypical scarlet fever cases, streptococcal carriers, and numerous hemolytic streptococcal infections other than scarlet fever, that rarely, if ever, are subjected to any control measures. We can thus appreciate how small a fraction of the total load of streptococcal infections is really affected by our present health regulations.

If our measures for control are to be at all adequate, health regulations must be changed to include all streptococcal infections. Such a change necessitates the close co-operation of physician and patient with the official health agencies. This means a prompt and complete reporting of cases and suspects by the physician, and a conscientious observance of the prescribed regulations by the patient. Such co-operation can usually be attained only if the inconvenience to the patient is reduced to a minimum.

Recognizing these facts, public health authorities are making attempts to liberalize their regulations and are recommending radical changes in the period of isolation for scarlet fever cases and in the quarantine restrictions for their contacts. Thus, in 1945, the American Public Health Association in their booklet, *The Control of Communicable Disease,* came out with the suggestion that scarlet fever be considered in the same category as all other hemolytic streptococcal infections due to Lancefield's group A, and that the isolation period of this whole group of streptococcal infections be limited to fourteen days in uncomplicated cases. They further suggested that the quarantine of contacts is not indicated and that the placarding of the home may be omitted.[1] New York City has gone even further, and since 1945 has reduced its isolation period for all uncomplicated hemolytic streptococcal infections, including scarlet fever, to "not less than seven days." They also do not restrict their contacts, and allow children contacts to attend school during the isolation period of the patient.[18]

Changes such as these are not without criticism. It is not uncommon for a physician to be called upon to treat children with scarlet fever who are apparently infectious much longer than seven days, some even as long as four weeks. Some physicians, therefore, feel that a radical reduction in the period of isolation might be the source of an increase rather than a decrease in secondary infections. Thus far, however, New York City has not found this to be true, for the number of cases of scarlet fever reported previous to the setting up of this new regulation compares very closely with the number of cases reported in the past two years.[18] It is well also to note that this marked reduction in isolation period refers only to simple cases, i.e., without complications. If complications are present, such regulations require the continuation of isolation until such complication either has disappeared or has been definitely proven to be noncommunicable. This is in accordance with Gordon's observation in 1932, when he definitely showed that it is the complicated case rather than the simple which is primarily productive of secondary cases.[11] The simple cases usually lose their infectivity fairly rapidly. This is especially true since the introduction of "sulfa" and penicillin therapy, for a more complete eradication of streptococci from the nose and throat is now possible in a much shorter interval. Residents of the Minneapolis General Hospital have frequently been able to obtain negative nose and throat cultures as early as twenty-four hours after the onset of penicillin therapy. Spink et al suggest a five- to seven-day course of penicillin therapy for a more permanent eradication of streptococci.[24] We can, therefore, feel assured that, if modern therapy is administered, a seven-day isolation period could prove adequate for the control of the simple cases. The occasional secondary case that might result from a too early release of a scarlet fever patient would be amply compensated by the greater range or extent of control of all the hemolytic streptococcal infections that would be possible under a more liberal form of regulation.

The atypical nature of many of our hemolytic streptococcal infections makes it desirable to have available some laboratory measures which could aid the physician in his diagnosis. The identification of the specific group and type of hemolytic streptococcus concerned in each infection requires too much time to be of value in furthering early diagnosis, and is too complicated a procedure to be practiced on a large scale. Less difficult, however, is the bacteriological examination for hemolytic streptococci as a whole. This procedure can be performed quickly and easily, and is therefore a service that can be provided by most public health laboratories. It should be emphasized, however, that the diagnosis of hemolytic streptococcal infection should not be determined primarily by the laboratory culture. Less than 50 per cent of the initial cultures taken by the health department nurses from definitely diagnosed scarlet fever cases proved to be positive for the hemolytic streptococcus. Though a higher percentage of positives has usually been obtained from hospitalized patients, it is important to note that the finding of the hemolytic streptococcus in cultures is primarily of help in the formation of a

positive diagnosis, but that a negative culture does not necessarily imply the absence of such infection. Furthermore, if cultures are to be of aid in the detection of suspect cases or carriers, they should be taken from the nose as well as the throat. Hamburger has recently shown that hospital cross infections, infections in barracks, and food-borne epidemics of streptococcal pharyngitis or tonsillitis have frequently been traced to carriers with positive nose cultures who exhibit high "streptococcal outputs." He therefore feels that carriers of B hemolytic streptococci whose nose cultures are positive constitute a more dangerous group than those in whom the streptococci remain confined to the throat.[14]

Transmission

The transmission of streptococcal infections has generally been conceded to be primarily due to droplets spread in person-to-person contacts. Though epidemics have also been traced to food and milk contamination by streptococcal cases or carriers, the exclusion of infected persons from the handling of food or milk products and the pasteurization of milk supplies have practically eliminated this mode of transmission. The respiratory spread of streptococcal infections continues to be a major threat to our well-being. The prompt isolation and modern treatment of all known streptococcal diseases, however, may prove of definite value in limiting the spread of such infections. Still, Schwentker does not feel too optimistic over the possible benefit that can be derived from isolation of known cases, for he points out that for every known case there are a dozen unknown carriers. The attempt to recognize and segregate such carriers, he believes, is impractical; for, he says, "practically every person becomes a carrier of streptococci for at least a few days."[23] Nevertheless, the prompt treatment and isolation of all suspect and definite streptococcal cases could remove the source of most of these contaminations and thus minimize the possible number of secondary cases.

Although the direct method of spread by person to person contacts seems to be the primary mode of transmission of streptococcal infections, the indirect method cannot be entirely discounted. Of late, much interest has been redirected towards the potentialities of disease transmission through the inhalation of infected droplets. Such droplets, Wells has shown, can frequently remain suspended in the air for many hours; yet, until recently, the number of such floating organisms was believed to be too small to actually infect the average individual. Robertson, Hamburger et al, however, have recently shown that though the bacterial population of a room may be low at times when the air is undisturbed, i.e., at night, it can increase tremendously during such periods of disturbance as may occur during the peak of morning activities. This increase in bacterial content is usually occasioned during the process of bed making, sweeping, et cetera, when all those organisms which had previously been deposited on the bed clothes, floor, and pajamas, are again redispersed into the air. On culturing samples of air in the various wards, they found that the organisms which seemed to predominate in the air were identical with the types of hemolytic streptococci which were causing most of the secondary or cross infections prevalent in those wards.

Further study also revealed that it was the individual with positive nose cultures who usually expelled the largest number of organisms into the air, for, not infrequently, it was found that the presence of even one nasal carrier in a ward would produce a heavier contamination of the air and cause more cross infections than would be occasioned by large numbers of individuals harboring the streptococcus in their throats alone.[20]

Such findings could well explain why some individuals with scarlet fever, on being hospitalized, would later be affected by complications due to an entirely different type of hemolytic streptococcus than the one found upon admission. Such findings now revealed why a scarlet fever patient who would develop rhinitis or sinusitis was more likely to cause secondary cases than one who was free of such complications. Such observations are also suggestive of the mechanism by which epidemics may occasionally sweep through an institution even though the finest type of contagious technique seemed to be observed.

Recognition of the airborne route as a potential mode of spread of respiratory and wound infections has led to various suggestions for its control. Such suggestions include both methods for the prevention of the dispersal of organisms into the air, as well as measures for the disinfection of the air. Numerous experiments testing the effectiveness of such measures have been instituted, and

though conclusive evidence is not yet at hand, suggestive data has already been accumulated. Thus, Robertson et al have shown that by oiling the floors of various barracks, they were able to reduce the number of airborne bacteria by approximately 70 per cent; while if, in addition, the bedding was also oiled, a further reduction of about 90 per cent of the bacterial counts was obtained. How effective this radical reduction in airborne bacteria could be for the prevention of respiratory infections due to streptococci has not yet been fully determined. Robertson claims, however, that the results obtained thus far in his experiments point to a significant reduction in the number of hospital admissions for acute respiratory diseases from barracks in which the bedding and floors were oiled.[20]

Further control of air contamination has also been attempted through air disinfection. For this purpose, ultraviolet radiation and the use of certain glycol vapors have been most commonly employed.

Studies made by Wells in Philadelphia suggest that ultraviolet irradiation of class rooms can be of material aid in minimizing the spread of respiratory diseases.[26] Recent attempts, however, by Perkins to confirm such findings were unsuccessful.[19] A detailed study of this problem was also made by Wheeler. Evaluation of his results reveals a definite reduction in catarrhal infections, but fails to demonstrate any significant reduction in streptococcal infections following the use of ultraviolet irradiation.[27] Various attempts have also been made to evaluate the effects of glycol vapors for the prevention of cross infections. Most of these studies have been made by various members of the Commission on Airborne Infections.[17] Results obtained thus far have been far from conclusive. Much more work seems necessary, therefore, before any definite opinion can be formed concerning the effectiveness of the above methods of air disinfection.

Susceptibility

Although streptococcal infections are exceedingly mild and of rare occurrence in tropical areas, they increase greatly in incidence and severity in northern latitudes. Variations in the occurrence and severity of this disease are even noted in the northern areas, for the number of such infections start increasing in fall, reach their peak in late winter, and then steadily decline until the summer season, at which time the disease becomes markedly reduced both in incidence and severity. Whether such variations in reaction are due to a fluctuation in the resistance of the host or rather to changes in the virulence of the invading pathogen is unknown at this time. Valuable use, nevertheless, could be made of such observations. Such observations can be instrumental in directing the transfer of patients with rheumatic fever to regions which have a low incidence of streptococcal disease, and thus through the prevention of recurrent streptococcal infections minimize the number of heart complications. The decrease in virulence of streptococcal infections in summer could also warrant a shortened isolation period for the occasional case occurring in that season.

The limitation of streptococcal infections and the prevention of recurrent attacks of rheumatic fever have also been attempted through the administration of prophylactic doses of the "sulpha" drugs. Thomas, in reporting the results of a four-year study in which 1 gram of sulfanilamide had been administered daily to a group of adolescents and young adults, noted that none of those individuals getting sulfa suffered from any acute B hemolytic streptococcal infection or from any attacks of rheumatic fever, whereas both streptococcal infections and at least five rheumatic fever episodes were observed in the control group. The United States Navy likewise reported that the prophylactic administration of 1 gram of sulfadiazine to part of the personnel in several training centers for a period of four months resulted in the reduction of 80 to 90 per cent of those respiratory diseases requiring hospitalization, as well as a reduction of about 85 per cent of all streptococcal infections. As a consequence of the minimizing of streptococcal infections, they report that the incidence of rheumatic fever in such cases dropped sharply, for only about one case in the treated group occurred, as compared to fourteen cases observed among the control group.[25]

Prolonged use of the sulfa drugs, however, carries with it a number of potential hazards, chief of which are the toxic reactions that may be occasioned by the drug and the development of sulfa resistant strains of streptococci. More desirable, therefore, would be the building of resistance through immunization. Frequent attempts at such immunization have been made during the past four decades but, as yet, none has been more than partially successful. Immuni-

zation, if it is to be of value for the control of streptococcal disease, should develop resistance of fairly long duration, and should be effective against the infective as well as the toxic component of such infections. No immunization procedure thus far has been able to satisfy these requirements.

The development of antitoxin by the Dicks provided fairly adequate protection against the toxic effects of streptococcal infections. Its use was soon found to be not without danger and of limited value, for the protection provided was of short duration, and its use was frequently followed by serum reactions and sensitiveness to horse serum. A safer type of passive immunity has been made possible through the use of convalescent serum. Its disadvantages lie also in its brief protection and in the fact that it is difficult to obtain.

A more permanent type of protection, i.e., active immunization, can be established by the injection of graduated doses of Dick toxin. Until recently such procedure was believed to provide full protection against scarlet fever infection. More recent studies, however, have shown that this form of immunization develops protection only against the recognizable features of scarlet fever, for it provides immunity solely against the toxic component of that disease. As such, it has proved to be of definite value, and is able to effect a significant reduction in the case fatality rates of scarlet fever.

Nevertheless, if the various complications and dangers associated with streptococcal infections are to be avoided or minimized, active immunization procedures must develop resistance against the infective as well as its toxic component. Thus far, however, vaccines prepared to meet such need have proven inadequate.

Some authorities feel that the making of an effective streptococcal vaccine is well nigh impossible. They point out that streptococcal infections can recur quite frequently in the same individual and, therefore, any immunity thereby obtained must be very brief and inadequate. On the other hand, recent studies by DeWahl indicate that individuals who are exposed daily to massive doses of hemolytic streptococci can develop a high degree of immunity to those organisms.[3] Furthermore, experimental studies by Rothbard reveal that the antibodies which develop in the sera of patients convalescing from group A streptococcal infections are type specific and tend to first appear between three to five weeks following the onset of the infection. Such antibodies were found to persist in the sera for at least thirty-seven weeks.[21] The repeated occurrence of streptococcal infections in the same individual could therefore be better explained on the basis of fresh contacts with different strains of streptococci rather than to a lack of immunity to the same strain. The failure of previous vaccines can also now be better understood, for immunity to streptococcal infections appears to be largely type specific, and a vaccine, if it is to be effective, should be made up of those streptococcal types prevalent in the community in which it is to be used. The administration of such a vaccine, in the areas and during the seasons in which streptococcal infections seem to flourish, should be of definite aid in minimizing both the incidence and complications associated with this hitherto uncontrolled menace. The selective use of type-specific streptococcal vaccines can well become our most effective weapon for the future control of streptococcal disease.

Summary

New laboratory methods for the differentiation of the various hemolytic streptococci have been instrumental in the discovery of valuable additions to the epidemiology of scarlet fever. Consideration of scarlet fever in the light of such new experimental findings has resulted in an entirely new understanding of this disease. A brief review of such developments has therefore been presented and the following significant facts have been noted:

1. Scarlet fever can no longer be considered a specific infection, but is rather a disease syndrome caused by any one of a wide variety of hemolytic streptococci. Such syndrome represents the composite effect of two components, namely an infective and a toxic component. The infective component is responsible for those signs and symptoms which are common to all streptococcal infections, while the toxic component is responsible for the scarlatinaform rash. Whether a hemolytic streptococcus will occasion a streptococcal infection or a streptococcal infection accompanied by a rash is dependent both on the amount of erythrogenic toxin produced by such organism and on the amount of antitoxin present in the host. Thus, if sufficient toxin is produced

in a Dick-positive individual, scarlet fever will result. When such toxin is produced in a Dick-negative individual, a streptococcal infection without the rash will usually be occasioned. However, if little or no toxin is elaborated by the attacking pathogen, the resultant effect both in Dick-negative as well as in Dick-positive individuals will be that of a localized streptococcal infection.

2. Measures for the control of scarlet fever must therefore deal with all hemolytic streptococcal infections, and not simply with those which show a rash. Suggested measures for such control include the limitation of the reservoir of infection through the adoption of health regulations which require isolation procedures for all streptococcal infections, and not for scarlet fever alone. To promote effective co-operation with such a regulation, it may be advisable to institute a radical reduction in the isolation period of all such infections.

Further limitation of the spread of streptococcal infections has been attempted through the modification of its transmitting agents. Such measures have concerned themselves with the minimizing of the dispersal of organisms into the air, through the oiling of floors, bedding, et cetra, and the disinfection of the air with ultraviolet irradiation and the use of certain glycol vapors. Results thus far have been suggestive but not conclusive.

Most promising, however, for streptococcal control appears to be the promotion of individual immunity to streptococcal infections through vaccine administration. Previous failures of vaccine prophylaxis are now felt to have been due to lack of appreciation of the variable number of strains present in the hemolytic streptococcal group. Immunity to streptococcal infections appears to be type-specific. Vaccines to be effective must therefore be made up of such strains prevalent in the area in which they are to be used. The selective use of such vaccines can well become a most valuable aid for the control of streptococcal disease.

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It has been estimated that nearly four per cent of all persons who visit physicians' offices complain of cough or expectoration. The alert physician will insist upon a sputum examination of all such patients. Such practice will be rewarded by the discovery of tubercle bacilli in three or four out of every 100 specimens examined. The family doctor will fairly often discover to his astonishment that a patient with slowly resolving pneumonia has an acid-fast reason for prolonged convalescence.—Herman E. Hilleboe, M.D., *Journal-Lancet*, June, 1947.

OSLER IN MINNESOTA

His Interest in Medical Education and Licensure

JAMES ECKMAN, Ph.D.
Rochester, Minnesota

I dare say that in a few generations Osler will be as soundly forgotten as Thomas Watson or even William Jenner, that he will be at most an occasionally cited name. Kind-hearted, honourable gentlemen are common enough to escape a bookish immortality.

—MAJOR GREENWOOD[19]

FIFTY-SIX years ago, William Osler (Fig. 1), just returned to the United States after a wedding trip to England, came out to the University of Minnesota to deliver an address, on October 4, 1892, at the dedication of a new medical building.[12] The next day he spoke, perhaps extemporaneously, before the Minnesota Academy of Medicine in Saint Paul.[43]

Much information concerning this visit by the distinguished internist of Johns Hopkins can be obtained from contemporary sources. But the writer has been uncommonly fortunate in that he has been accorded an advantage conferred upon few historians: the testimony of one who both knew the historical figure concerned and was a witness of the event in question.[65] The late Dr. Frederick J. Wulling (1866-1947), dean emeritus of the College of Pharmacy of the University of Minnesota, became acquainted with Osler in 1889, when Dr. Wulling was an associate of Dr. Samuel Fleet Speir (1838-1896), in Brooklyn, New York. Three years later, when Osler came to the University of Minnesota to dedicate the medical building, he remembered Dr. Wulling at once and greeted him cordially. The two men sat at the same table at the ceremonies—Cyrus Northrop, Governor Merriam and former Governor Pillsbury on one side, and the four deans, Dr. Millard, Dr. Brazie, Dr. Sudduth and Dr. Wulling, on the other. Whatever value this essay may be found to possess has, consequently, been immeasurably enhanced by the material which Dr. Wulling[65] has most generously supplied.

In itself, the visit of Osler to Minnesota is of no particular moment, for the postliminous journeys of the eminent are not, as a rule, calculated to derange the fortunes of commonwealths. What Osler said, on the other hand, considered in the light of medicine and medical practice in Minnesota at the time of his remarks, may be of considerable interest and some value. Minnesota in 1892 had been a member of the Federal Union for only thirty-four years. And although territorial legislators had thoughtfully provided for a medical school in the University of Minnesota in 1851,[2] a department of medicine had not been established until 1883—a department of medicine which was empowered to confer the degrees of bachelor of medicine and doctor of medicine but which actually had no students and offered no courses![9,62*]

The University Address

The building which Osler was to help dedicate is, according to Professor Schmeckebier,[56] a Renaissance type of edifice (Fig. 2). It was erected at a cost of $61,000[23] by L. Lund, Contractor, in 1892.† Both Greene[18] and Beard[10] wrote that Dr. Perry H. Millard (1848-1897), first dean of the University of Minnesota College of Medicine and Surgery, whom President Cyrus Northrop is said[18] to have called "a lesser Napoleon," advanced the money from his own pocket to pay for the structure.° At one side of the entrance

*Because, as will be shown herein, the only function of the University of Minnesota Department of Medicine when it was created in 1883 was to examine candidates for the license to practice medicine in Minnesota. The Department of Medicine could confer the degree of bachelor of medicine upon any candidate who passed the examination offered by the faculty, and "To the graduate in medicine it offered the further degree of M.D. upon the presentation and satisfactory defense of an approved thesis." See references.[9, 62]

†Ground for the new building apparently was broken in August or September, 1891. President Northrop of the University of Minnesota was said to have declared, at that time, that the building would be ready for occupancy "by the first of next year," which would be 1892. The building was not even completed, however, when Osler helped to dedicate it on October 4, 1892. See: The University of Minnesota. *Northwestern Medical Journal*, 19:143, (Sept.) 1891.

°Section 10 of chapter 163 of the general laws of Minnesota of 1891 appropriated $80,000 for new buildings for the University of Minnesota, the money to be derived "from any other funds in the state treasury not otherwise appropriated." Half of this amount was to be made available on April 1, 1892; the other half was to be made available on April 1, 1893. The state treasurer announced that in 1891 the sum of $73,488.03 had been paid by him to the university for buildings; in his report for 1892 he said that he had paid to the university for buildings the sum of $36,247.49. See: *General Laws of the State of Minnesota Passed During the Twenty-Seventh Session of the State Legislature Commencing January Eighth, One Thousand Eight Hundred and Ninety-One.* Saint Paul: Pioneer Press Co., 1891, p. 378. See also: *Annual Report of the State Treasurer of Minnesota, for the Fiscal Year Ending July 31, 1891.* Minneapolis: Harrison and Smith, State Printers, 1891, p. 75. See also: *Annual Report of the State Treasurer, of Minnesota, for the Fiscal Year Ending July 31, 1892.* Minneapolis: Harrison and Smith, State Printers, 1892, p. 75.

From the Division of Publications, the Mayo Clinic.

is a carved inscription which discloses that the building was designed by Reed and Stem of Saint Paul, a well-known architectural firm composed of Charles A. Reed (1858-1911) and Allen H. Stem (1856-1931). This firm, founded in 1892, later designed the Saint Paul Hotel, Saint Paul Auditorium, Metropolitan Opera House of Saint Paul and the Grand Central Terminal in New York City.[54**] The building which Osler dedicated still stands on the university campus. It has been occupied by the College of Pharmacy since 1912, after reconstruction made necessary by a fire which destroyed virtually everything but the walls.[65] On January 9, 1942, the Board of Regents of the University of Minnesota gave the name, "Wulling Hall," to the building.[65]

The writer has not been able to answer the question of who actually invited Osler to make the dedicating address,†† but the occasion very evidently was considered to be of major importance. One newspaper[51] noted that the Board of Regents of the university had sent out 4,000 special invitations to the proceedings, but that since the main lecture room in the new building would accommodate only 500 persons, "hosts of people were unable to take part in the exercises." It is curious to notice that after such energetic preparations on the part of the Regents, most of them were not there.[65]

The program was to begin at 8:00 p.m., but the lecture room was already filled at an early hour.[32] The *Minneapolis Tribune*[33] was uncommonly eloquent:

> If old Esculapius, god of medicine, still lingers about looking after the welfare of humanity, he must needs have been pleased last night. For over on the State University campus there was being dedicated to him a new temple. In point of architecture and equipment, this new medical building is not to be surpassed, and its dedication marks another stride in the advance of Minnesota's university. Since first the medical course was taken off paper and made a reality, the college was cramped into an inconvenient building, now the Asbury Hospital, and the students labored under great disvantage [*sic*]. But the new quarters are commodious and modern and the medics are jolly over the prospects.

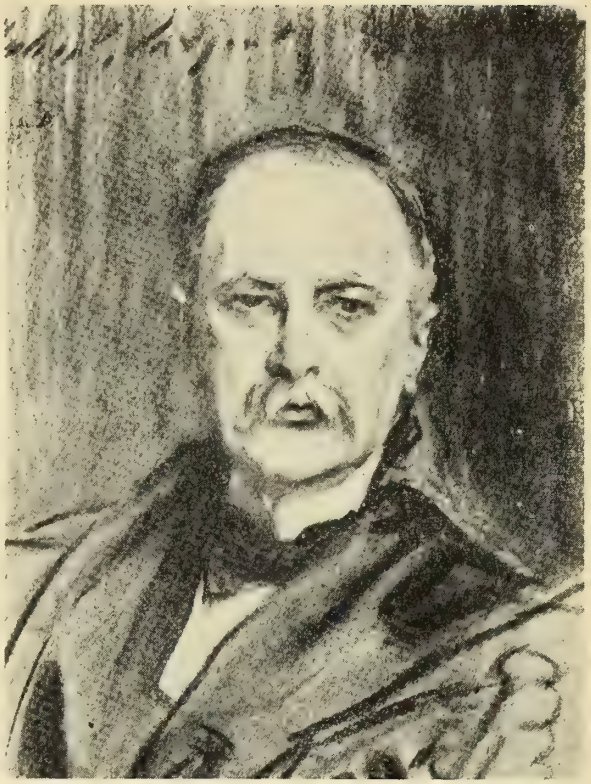


Fig. 1. Sir William Osler, after a charcoal portrait by the noted American artist, John Singer Sargent (1856-1925). Reproduced by permission of the College of Physicians of Philadelphia.

The Reverend Wayland Hoyt (1838-1910), pastor of the First Baptist Church of Minneapolis, opened the ceremonies with a prayer. Governor William R. Merriam (1849-1931) then briefly presented the building to the president of the Board of Regents, former Governor John S. Pillsbury (1827-1901). Cyrus Northrop (1834-1922), president of the University of Minnesota, next introduced, successively, Dr. Perry H. Millard (1848-1897), dean of the College of Medicine and Surgery; Dr. Henry W. Brazie (1843-1927), dean of the College of Homœopathic Medicine and Surgery; Dr. W. Xavier Sudduth (1853-1915), dean of the College of Dentistry; and Dr. Frederick J. Wulling, dean of the College of Pharmacy. Each man gave a brief address. President Northrop then introduced Professor Osler, remarking that since no other institution in the United States had done so much for university work as Johns Hopkins had done, it was fitting that Professor Osler should speak on the occasion at hand.[32]

**Some account of the work of these two Saint Paul architects is to be found in: Marshall, David: *Grand Central.* New York: McGraw-Hill Book Co., Inc., 1946, pp. 248-260.

††The writer had assumed that since the Board of Regents had sent out 4,000 invitations to the event, the Regents probably had invited Osler to speak at the ceremonies. This assumption, it turns out, cannot be proved. The minutes of the proceedings of the Board of Regents are kept in manuscript record books in the office of the comptroller of the University of Minnesota. Proceedings from March, 1868 to 1904 are contained in a volume marked "B 1." On July 10, 1947, W. T. Middlebrook, vice president of the University of Minnesota, advised A. J. Lobb, regent of the University of Minnesota, that search of book "B 1" of the proceedings of the Board of Regents produced no reference to either Osler or the dedication of the building in question in 1892. This information was placed in the hands of the writer by Mr. Lobb.

The circumstances under which Osler was to speak were not so tranquil as one might think now, fifty-six years after the event. He was not visiting a long-established medical school. On the contrary, the faculty before which he spoke had been in existence only four years, and had actually offered courses of instruction for only three years.[10,11,‡] It had come into existence as a result of the amalgamation, in 1888, of the old Saint Paul Medical College, the Minnesota Hospital College of Minneapolis, and the Minnesota Homœopathic Medical College of Minneapolis,[10] largely, it was said, as a result of the labors of its first dean, Dr. Millard.* The professors, ostensibly united as the faculty of the University of Minnesota College of Medicine and Surgery and the College of Homœopathic Medicine and Surgery, naturally could not have been unmindful of the institutions which they had seen obliterated by the union. Divers problems, uncertainties, perhaps even smoldering animosities, must have pervaded the minds of some of the men who had assembled to listen to the words of the celebrated internist from the Johns Hopkins University.

Osler perforce addressed two separate medical faculties that night: the so-called regular medical faculty and the homeopathic medical faculty. The deans of both of these faculties—Perry H. Millard and Henry W. Brazie—were speakers on the same program of which Osler was the major figure.[32,65]

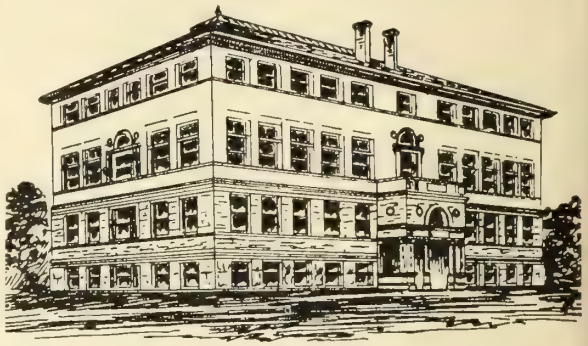


Fig. 2. The medical building at the University of Minnesota which William Osler helped to dedicate on October 4, 1892. This building was burned almost to the walls in 1912, but was rebuilt and thereafter was occupied by the College of Pharmacy. Since 1942 it has been known as Wulling Hall. Drawing from the *Minneapolis Times*, October 5, 1892.

The power of the so-called regular medical faculty was unquestionable, but the strength of the homeopathic practitioners at this particular point in the history of Minnesota cannot be dismissed abruptly. In 1892 homeopathic physicians had had a state society for a quarter of a century.[14,20] At the time, they had two medical journals† of their own, and the *Medical Argus* observed[35] that the homeopathic faculty at the university was planning a third. The homeopaths had had two other medical journals° previously, not including the *Transactions* of their state organization.[15,20] They had a number of homeopathic hospitals. They had had a homeopathic medical college, separate from university control.[15] Only five years before Osler's visit they had had sufficient political power to assure themselves, by act of legislature, of two of the nine members of the reorganized Minnesota State Board of Medical Examiners[5]; as late as seventeen years after Osler's visit they were still powerful enough to assure inclusion, in the appropriation for the expenses of the state government, of a section** which gave them $50,000 with which to erect a new medical building of their own on the campus

‡The College of Medicine and Surgery and the College of Homœopathic Medicine and Surgery of the University of Minnesota were formed in 1888, when the Saint Paul Medical College, the Minnesota Hospital College of Minneapolis, and the Minnesota Homœopathic Medical College of Minneapolis surrendered their charters as a requisite for amalgamation within the University of Minnesota. In 1888 the course of lectures at the College of Medicine and Surgery consisted of a term of three scholastic years, each scholastic year consisting of six months. In 1890 the scholastic year was extended so that it consisted of eight months. In 1894 the term was increased to four years. In the scholastic year of 1910-1911 it was announced that a fifth, or hospital, year would be required for the degree of doctor of medicine, this provision to become effective in the scholastic year of 1914-1915. Not long thereafter the University of Minnesota became one of the first institutions to require that the total period of instruction for a candidate for the degree of doctor of medicine be seven years, including the final year in internship. The degree of bachelor of science or bachelor of arts became a prerequisite to the degree of doctor of medicine; such a baccalaureate could be gained by two years of study in the College of Science, Literature and the Arts and two years of work in the Medical School, or by three years in the arts college and one year in the Medical School. In 1913 the faculty of the Medical School was reorganized to make possible intensive teaching by salaried clinical teachers; private clinics were abolished, and clinical work was concentrated in the University Hospital and the several municipal hospitals. See: Beard, R. O.: An Inventory of the Progress of Medical Education in America and in Minnesota. *Journal-Lancet*, 35:607-609, (Nov. 1) 1915. See also: Rogers, J. T.: President's Address: Team Work. *Journal-Lancet*, 35:602-607, (Nov. 1) 1915.

*The old Minneapolis College of Physicians and Surgeons was opened in October, 1883, offering a three years' graded course consisting of six months' instruction each year. Proper preliminary preparation was required for entrance to the school. During the first five years of its existence, the Minneapolis College of Physicians and Surgeons neither examined its students at the end of the three-year course nor conferred a degree upon them; those who had completed the entire course were sent to the University of Minnesota Department of Medicine to be examined for a degree from that institution. In 1895 the Minneapolis College of Physicians and Surgeons became the department of Medicine of Hamline University, with a faculty of forty-one members. In 1907 and 1908 negotiations were undertaken for merger of the school with the University of Minnesota College of Medicine and Surgery. The merger was effected in March, 1908. See: Moore, J. T.: The College of Physicians and Surgeons. *Journal of the Minnesota State Medical Association and Northwestern Lancet*, 29:45-46, (Jan. 15) 1909.

†These were the *Medical Argus*, published from 1890 to 1898; and the *Minneapolis Homœopathic Magazine*, published from 1892 to 1902. See reference.[15]

°These were the *Minnesota Homœopath*, published in either 1858 or 1859; and the *Minnesota Medical Monthly*, published from 1886 to 1888. See reference.[15]

**Paragraphs 11 and 12 of section 35 of the session laws of 1909. See reference.[1]

of the University of Minnesota, plus $5,000 with which to maintain the building for one year.[1]†† Nineteen years after Osler spoke at the University of Minnesota, the determination of the homeopaths of the state was such that they introduced a bill in the Minnesota State Legislature which, had it been enacted, would have created either a department or a college of homeopathic medicine at the university.°°

What, then, did Osler say to an audience of which the individual convictions were so seriously divergent? He said very little that was remarkable, very little that was new, and nothing that was controversial. No other course was open to him. He condemned independent medical colleges,[44] but so did almost everyone else at that particular time. The president of the American Medical Association, for instance, had considered the thought important enough to be emphasized in his address[16] at the thirty-ninth annual session of the association at Cincinnati in 1888, and the *Journal* of that organization had commended him for his words.[47]

Osler had kind words for the "schools with university connexions," and he approved of what he called "the State schools, of which this college [presumably the University of Minnesota College of Medicine and Surgery] is one of the few examples" because he thought such schools exemplified recognition that medicine was one of the technical branches of learning which ought to be taught in an institution supported by the people at large.[44] This was a subject which Osler's great colleague at the Johns Hopkins University, William Henry Welch (1850-1934), had developed at considerable length in an address[63] given at Yale University in 1888, productive of national attention in the field of medical education.[61]

Osler said that the destiny of any institution rests not in great buildings or much equipment, but on the men who work in the halls of such a place and the ideals which they possess.[44] This was, as Osler disclosed, a notion he had taken from Cardinal Newman. It was also essentially the same thought which Thomas Henry Huxley (1825-1895) had presented to the students and faculty of the Johns Hopkins University during a lecture at that institution in 1876.[21]*‡

"Thoroughly equipped laboratories," Osler said, *"in charge of men, thoroughly equipped as teachers and investigators, is the most pressing want to-day in the medical schools of this country."*[44]

This probably was true in the United States in 1892 and for some years thereafter,† but it was, again, scarcely a new or even different notion. Shryock[57] has shown that in the German university system the value of laboratory research and teaching had been recognized, even as early as 1825, to such a degree that the Germans in that year created "the first genuine laboratories in the modern sense of the term—excepting only the older ones devoted to anatomy."

Welch[64] said that Liebig's laboratory, opened in 1825, was the one which exerted the greatest influence on the subsequent establishment and organization "of public scientific laboratories in general"; that the first physiological laboratory was that of Purkinje, opened in 1824; and that the first pathology laboratory was that of Virchow, founded in 1856. The first laboratory of clinical medicine provided with its own building and sufficiently equipped for research apparently was the William Pepper Laboratory of Clinical Medicine in Philadelphia, opened in 1895.[57,64]

Even in American universities, however, there were laboratory facilities long before Osler's hortatory remarks of 1892. Nor was it a physi-

††It was not built because the Board of Regents in May, 1909, after passage of the act in question, abolished the College of Homœopathic Medicine and Surgery. See reference [11] for details.

°°The measure was House File No. 315, "A Bill for an Act to Amend Section 1479 of the Revised Laws of Minnesota and Creating a College or Department of Homeopathic Medicine and Surgery," and it was introduced by Dr. Henry R. Diessner (1853-1935), of Waconia. See reference.[49]

*The appearance of Huxley as lecturer at this university in 1876 seems to have been greatly resented by the citizens of Baltimore, who had already feared that the new institution, so extensively devoted to the natural sciences, would be hostile to religion. The Baltimore *American* attacked Huxley as a champion of the theory of evolution, than which "there is no more frightful heresy extant," and when it was observed that his lecture was not preceded by a prayer, the fact was advanced as indication of the contempt of the new university for religion. See: French, J. C.: *A History of the University Founded by Johns Hopkins.* Baltimore: Johns Hopkins Press, 1946, pp. 82-83.

‡It is interesting to notice that in 1947 the president of the Johns Hopkins University inveighed against the ideas of both Huxley and Osler in this respect: "Opinions run in packs, and new private foundations are generally insisting that their policy is 'no money for bricks and mortar.' It seems so plausible to say, 'This money must go into productive work, not bricks and mortar. We want to see immediate results. We want to feel that our grant has created a new and useful piece of knowledge.' No one seems to see that the scholar does his best work when he is sheltered from rain and frost. We all remember the work on pitchblende that the Curies did in their search for radium, but we forget the hardships they endured in winter as they worked in a cold shed with a leaky roof. Someone, somewhere must build laboratories and classrooms, train young scholars, and hold to a steady course of support as promising men grow to maturity—or there will be no discoveries." See: Bowman, Isaiah: *The Johns Hopkins University: Report of the President, 1946-1947.* Baltimore, 1947, p. 29.

†For instance, one of the reasons advanced by the *St. Paul Medical Journal* for the passing of the Hamline University Medical School in 1908 was that the institution was deficient in anatomy, physiology, chemistry, pathology and bacteriology laboratories. "These laboratories, the Hamline school, which was a private corporation with very little capital, could not maintain as they should be maintained and with such a handicap it could not make good." See: The Passing of the Hamline Medical School. *St. Paul Medical Journal,* 10:211-212, (Apr.) 1908.

cian, according to Professor Nevins,[34] who led the way for reform of medical education in America. He identified Charles William Eliot (1834-1926), president of Harvard University, as the man who, against "an incredible weight of conservative opposition," in the early seventies not only insisted that the Harvard Medical School extend its schedule to three full years of eight or nine months each, but also demanded and secured the establishment of laboratory training in medicine and forced the medical faculty to give severe written examinations to the students.*

Schlesinger[55] wrote that between 1878 and 1898 in the United States, private benefaction added $140,000,000 to the funds available for higher education, so that "Amply equipped for the first time with tools of research—laboratories, instruments of precision, libraries, museums, observatories, hospitals—scholars and scientists in the United States were enabled to make a contribution to the world's learning fully comparable to that of the first nations of Europe."

So far as the University of Minnesota is concerned, it is noteworthy to discover that seventeen years after Osler's plea for laboratories and laboratory workers, W. J. Mayo declared that the prime need of the university was a clinical hospital.[27] This declaration was made in the course of a short address in which he did not once mention laboratories.

Half a century after Osler's remarks at the University of Minnesota, the laboratory apparently had assumed such fearsome proportions that perhaps even the Regius professor of medicine at Oxford would have reconsidered the fervor of his adjuration of 1892:

> The teaching of medicine as conducted today in the average medical school has brought forth a crop of young physicians who seem to depend too much on laboratory procedures. Much of the bedside teaching in these schools has drifted into the dialectics of mechanised and biochemical data. The rapid strides in biochemical studies, the extension of mechanical procedures in contrast to the good history and physical examination, has [*sic*] crowded out clinical perception and dulled clinical judgment.
>
> We must reverse this tendency and insist on a good analysis of a history and a physical examination before any laboratory investigations are done.[24]

*This apparently was a prospect which evoked deep consternation, for the dean of the Harvard Medical School is said to have exclaimed in 1870 that it was impossible to give written examinations in the medical school because "a majority of the students cannot write well enough." See reference.[34]

In the address of 1892 is discernible a conviction—"Insensibly, in the fifth and sixth decades, there begins to creep over most of us a change, noted physically among other ways [by] the silvering of the hair and that lessening of elasticity which impels a man to open rather than to vault a five-barred gate"[44]—which reached full expression thirteen years later in a farewell address Osler gave at the Johns Hopkins University on February 22, 1905.[45]**

After the address, most of the physicians in the audience lingered to attend an informal reception in honor of Osler.[65] Osler requested Dean Wulling to remain at his side, and asked him to repeat to him the names of some of the physicians whom Dean Millard presented to him. Dean Wulling recalled that on this occasion Osler seemed not to be as good a conversationalist as usual, but the Johns Hopkins professor responded cordially to each introduction, and at length remarked to Dean Wulling that he was glad to have made so many friends in Minnesota.[65]

The reactions to Osler's address were varied. A student in the College of Pharmacy who had just been graduated from a high school said it was the best speech he had ever heard; a student in the College of Dentistry thought Osler's words were "over his head"; a student in the College of Medicine and Surgery declared that Osler's remarks were addressed to minds inferior to those of medical students. President Northrop, a few days later, allowed that Osler's address was "good, for a medical man."[65] One Minneapolis newspaper said that Osler treated his subject in "an able and learned manner"[32]; another referred to the speech as "a masterly address."[33] Cushing[12] many years later adjudged the address to be one of the most effective Osler ever made.

**This was the famous piece which he called "The Fixed Period," after Anthony Trollope's novel, *The Fixed Period.* Osler's address created an uproar in the public prints because it was charged that he had urged that all men more than sixty years old should be chloroformed. Actually, he did not, as study of "The Fixed Period" will show. In 1906, writing from the relative security of Oxford, Osler explained his misjudged remarks of the previous year: ". . . to relieve a situation of singular sadness in parting from my dear colleagues of the Johns Hopkins University, I jokingly suggested for the relief of a senile professoriate an extension of Anthony Trollope's plan mentioned in his novel, *The Fixed Period.* To one who had all his life been devoted to old men, it was not a little distressing to be placarded in a world-wide way as their sworn enemy, and to every man over sixty whose spirit I may have thus unwittingly bruised, I tender my heartfelt regrets. Let me add, however, that the discussion which followed my remarks has not changed, but has rather strengthened my belief that the real work of life is done before the fortieth year and that after the sixtieth year it would be best for the world and best for themselves if men rested from their labours." See: Osler, William: *Aequinimitas, With other Addresses to Medical Students, Nurses and Practitioners of Medicine.* Philadelphia: P. Blakiston's Son and Co., 1920, ed. 2, p. viii.

Any critical analysis of Osler's remarks on this occasion should be made in the light of the situation in which he found himself on that evening. He was in the midst of strangers. He faced a divided audience: on the one side were the so-called regular faculty members; ranged against them were the numerically fewer homeopathic faculty members†† who nevertheless could rely upon powerful political support within the state. In other quarters of the university, the medical faculty and students were regarded as "barbarians" and the opening of the new medical building was viewed with disfavor if not alarm.[11]

Finally, the University of Minnesota itself was relatively new, with no great endowments or other forms of formidable resources, and as such was understandably sensitive to the opinions of a man associated with scholars as illustrious as those of the Johns Hopkins University. Considerations such as these must have passed through the mind of Osler as he faced the audience at the University of Minnesota on the October evening in 1892.

The Saint Paul Address

In Saint Paul, Osler was a guest of Dr. Albert E. Senkler (1842-1899), at the latter's home at 177 Virginia Avenue.[53]‡ On October 5, 1892, the evening of the day after the university address, Osler was entertained at the Minnesota Club, Fourth and Cedar Streets, by members of the Minnesota Academy of Medicine.[52] A list of the physicians who attended the meeting, as published in a Saint Paul newspaper the next day, includes the names of some of the most prominent practitioners in the state; they came from such distant places as Brainerd, Saint Cloud, Winona, Albert Lea, Northfield and Faribault, as well as Minneapolis and Saint Paul.[52] After the dinner, the guests adjourned to the House of Representatives in the State Capitol at Tenth and Wabasha Streets. There Osler spoke on "License to Practice."[43] His remarks were by no means new, for he had delivered much the same address in 1889 before the Medical and Chirurgical Faculty of the State of Maryland, and by the time he spoke in Saint Paul his address had already been printed in at least four different publications three years earlier.[39-42] The text of the Saint Paul address[43] does not conform *verbatim* to the text of the previous versions, for it is greatly condensed, but in a large part the substance is essentially identical.

He began by saying that it was a pleasure to elaborate this subject to physicians of Minnesota[43]—"a state which stands foremost in the attempt to regulate the practice of medicine." He had praised Minnesota in the same respect three years earlier.[39-42] Next, however, he deplored the fact that the United States was the only country in the world in which the doctorate carried with it the right to practice medicine.[43] Germany, he said, required the most rigid examination of all before a physician was admitted to practice; the German examination was, he thought, the "most thorough and systematic examination in medicine in the world."[43] In Great Britain the degrees of the Royal College of Physicians—which is not a teaching institution—as well as the degrees of certain older universities, constituted licenses to practice. Canada, Osler declared, had the best plan of all. Each province was divided into districts; in each district forty physicians were elected by their fellow practitioners, and constituted a board of control over medical matters. The board in turn appointed an examining body, before which must come all physicians who wished to practice medicine in the particular district. "I trust that the State of Minnesota," Osler concluded, "which has progressed so far in the restriction of medical education, will, with other states, go still farther and adopt the Canadian plan"[43]—the same plan he had praised in a previous address on the same subject in 1889.[39-42]

Why should Osler have chosen the subject of medical licensure at this time, and why did he twice commend Minnesota for the progress it had made in medical licensure? The answers to these questions may be found in a paper published in 1921 by Beard,[11] who revealed that he was a member of the legislative committee which drafted the Minnesota medical licensure act of 1887.[5] This act, Beard said, created "an independent Board of Medical Examiners under the first law of its type, known as the examination law, enacted

††In the first year of medical instruction in the University of Minnesota all students—so-called regular, homeopathic and dental—attended the same courses, in which only anatomy, physiology and chemistry were taught. At the end of this first year, the medical student could decide whether he wished to continue in the College of Medicine and Surgery or to enter the College of Homœopathic Medicine and Surgery. The three-year course was said to have been "modeled after that pursued at the Harvard Medical School." See: The Medical Department of the State University. *Northwestern Lancet*, 8:137, (May 15) 1888.

‡Greene in 1920 recalled Dr. Senkler as "that gifted, modest, all-around man, Dr. A. E. Senkler, the simplicity and clarity of whose lectures was [*sic*] the direct reflection of his analytic, orderly, and systematic modes of thought." See reference.[18]

in the United States. It discarded the diploma as an evidence of medical education. It required an examination of every applicant for license to practice medicine in Minnesota."[11] This was the law to which Osler alluded in his Saint Paul address[43] in 1892, and since it was said to be the first law of its kind enacted in the United States, it is not difficult to see why he should have displayed some enthusiasm over it.

Yet this licensing law of 1887, like most works of value, did not spring spontaneously from the Legislature of 1887. It had two largely unsatisfactory predecessors which must be understood before the act in question can be fully appreciated.

The history of medical licensure in Minnesota has not been written. Rush's thesis[50] of 1931 would appear to deal with the problem, for he announced that he proposed to "give something of the historical background [of medical licensure in Minnesota] where that seems to be necessary." Actually, however, Rush almost wholly ignored historical development when he investigated the licensing of practitioners of the healing arts in Minnesota.

It is of some moment to observe that even in territorial days, Minnesota contrived obliquely to regulate the practice of medicine to a slight degree. Chapter 19 of the revised statutes of 1851*† empowered county medical societies to examine medical students who were at least twenty-one years old, had "a good English education," had studied medicine for at least three years "with some respectable practitioner," and had a "good moral character."[37]†† The standard fee for such an examination was $10, which entitled the successful candidate to a diploma indicative of a membership within the society, signed by the president of the society. An additional fee not to exceed $3 could be charged by the society "for the purpose of procuring a medical library, anatomical cabinet, chemical apparatus, or for the encouragement of useful discoveries in the science of medicine."[37] It is to be noticed that this statute did not, however, pertain to licensure. A man was free to practice medicine in the territory, with or without the degree of doctor of medicine. In many respects, this statute of 1851 is not greatly different from one of 1781 in Massachusetts, which incorporated the Massachusetts Medical Society and provided for the examination of candidates for membership in that organization.[26]

The first state law which regulated the practice of medicine in Minnesota is found in chapter 41 of the general laws enacted by the Legislature of 1869.[3] This law, approved by Governor William R. Marshall (1825-1896) on March 9, 1869, likewise did not require the candidate for licensure to possess the degree of doctor of medicine. He could (1) have attended two full courses of medical instruction and been graduated from some school of medicine in either the United States or a foreign land, or (2) present a certificate of qualification from some state, district or county medical society. There was no examination of any kind. The candidate was obliged only to present his diploma or his certificate to the clerk of the district court of the district in which he practiced, by October 1, 1869. If he could not produce either document, he could not practice medicine in Minnesota. Violation of the statute was punishable by a fine of not less than $50 and not more than $100. A second violation could be punished by the fine plus incarceration for thirty days in the county jail in the county concerned.[26]

The statute was repealed by chapter 47 of the general laws of Minnesota passed by the Legislature of 1870, signed by Governor Marshall on February 24, 1870.[7] The law of 1869 is of some interest in that, according to sections 1 and 3, the State of Minnesota took official cognizance of certification of a candidate's qualifications by a medical society. Such a feature was by no means new, however, for in 1819 the State of Massachusetts by legislative act had authorized the Massachusetts Medical Society to appoint medical examiners in each county and to license those candidates who passed the examinations; each person licensed was to file his license in the office of the clerk of the

*Passage of this territorial statute concerning county medical societies would appear to strengthen, but not confirm, Armstrong's contention that a "Minnesota Medical Society" was organized in the Territory of Minnesota on July 23, 1853. The records of this territorial medical society, if indeed it existed, have not been found. See: Armstrong, J. M.: History of Medicine in Ramsey County. *Minnesota Medicine*, 22:251-257, (Apr.) 1939.

†This statute subsequently became sections 1 through 14 of chapter 17 of the public laws of the State of Minnesota, 1858, which chapter was entitled "Corporations, Their Formation and Regulation." See: *The Public Statutes of the State of Minnesota.* (1849-1858.) *Compiled by Moses Sherburne and William Hollinshead, Esqrs., Commissioners.* Saint Paul: Pioneer Printing Co., 1859, pp. 277-279.

††Section 5 of chapter 108 of the same statutes specifically mentioned physicians in another aspect of medical regulation: "If any physician or other person, while in a state of intoxication, shall prescribe any poison, drug or medicine, to another person, he shall be punished by imprisonment in the county jail not more than one year, or by fine not exceeding five hundred dollars." See: *The Revised Statutes of the Territory of Minnesota, Passed at the Second Session of the Legislative Assembly, Commencing January 1, 1851.* Saint Paul: James M. Goodhue, Territorial Printer, 1851, p. 521.

town in which the man proposed to practice.[26] This brings to mind a rather formidable power enjoyed by the old Minnesota State Homœopathic Institute: that of conferring the degree of doctor of medicine on any member considered by the censors worthy of the honor. Dr. H. A. L. Von Wedelstaedt (1817-1900), of Saint Paul, received such a degree in 1867.[14,17]

Between 1870 and 1883 there was no regulation of the practice of medicine by the State of Minnesota. Chapter 125 of the general laws of Minnesota of 1883 is the so-called diploma law,[4] signed by Governor Lucius F. Hubbard (1836-1913) on March 5, 1883. The essential features of this law, according to Millard,[31] who Greene[18] said was responsible for the introduction and passage of the bill to create the act, were copied from the Illinois licensing law[22,30,46] which became operative on July 1, 1877.** Section 2 of this statute required the University of Minnesota Department of Medicine to organize itself as a board of medical examiners. If a man had a valid diploma demonstrating that he was a doctor of medicine, he was licensed at once; if he had no diploma,†† he was to be examined before the board. Each man licensed by the presentation of a diploma paid a fee of $1; each man licensed by examination paid a fee of $5. The person licensed was given a certificate from the board which he recorded in the clerk's office of the county in which he resided.[4]

The penalty for neglect or refusal to comply with this act was a fine of not less than $50 and not more than $500, or incarceration in the county jail for not less than thirty days or not more than 365 days, or both the fine and the imprisonment. Any physician who had been practicing medicine in Minnesota for five years at the time the bill became law was exempted from its provisions.[4]

The constitutionality of this law was argued before the Minnesota State Supreme Court°° in 1884 and 1885,[13,58-60] but the law was upheld by the court in all particulars.*

It is seen, then, that the present University of Minnesota Medical School, actually created by the Board of Regents on January 5, 1883,† came into existence to function solely as a state board of

°°Briefs in the cases in question are on file in the Minnesota State Library in the Capitol in Saint Paul.

*In the first instance, Dr. David F. Powell of La Crosse, Wisconsin, presented his diploma from the Louisville Medical College dated February 28, 1873. The Minnesota State Board of Medical Examiners found that the diploma was genuine, but that Dr. Powell, by advertising himself in newspapers and circulars as a medicine man of the Winnebago Indians, adopted by them and styling himself "White Beaver," and claiming that he had a remedy which would cure cholera morbus if taken internally and rheumatism if applied externally, had been guilty of unprofessional and dishonorable conduct. The board therefore refused to issue a license to Dr. Powell. Dr. Powell thereupon obtained an alternative writ of mandamus from the Ramsey County District Court which would have required the Minnesota State Board of Medical Examiners to issue a license to him. The Minnesota Supreme Court on July 19, 1884, handed down the decision that (1) Dr. Powell had the right to be heard on the subject of the investigation of his conduct by the board, (2) the word "unprofessional" in section 9 of the Act of 1883 was used convertibly with "dishonorable," and had a like meaning, (3) the act itself was not unconstitutional, and (4) Dr. Powell was not entitled to remedy by mandamus to secure review of the correctness, or the reversal, of the determination of the board. See reference.[58]

In the second instance, the challenge of the act by the plaintiff, Dr. Edward D. Chapman, was based on curious reasoning. He had been licensed by the Minnesota State Board of Medical Examiners, but in June of 1885 the board had served written notice upon him of unprofessional and dishonorable conduct, and had notified him to appear before the board to show why his license should not be revoked. Dr. Chapman obtained a writ of prohibition against the board, and asked to have it made permanent. He argued that the license to practice medicine, once granted, was private property, and that revocation of such a license was exercise of judicial power, which he alleged could not be vested in any executive or administrative board or even in the Legislature itself, but only in the courts. Hence, he said, to assume to vest this power in a state board was to deprive persons of private property without due process of law, and violated the Constitution of Minnesota. The Minnesota Supreme Court on December 24, 1885, held that the revocation of a license to practice medicine in Minnesota by the Minnesota State Board of Medical Examiners was not an exercise of judicial power, and that, hence, the power of revocation of such a license could, constitutionally, be vested in the board in question. See reference.[59]

In the third instance, Dr. E. C. Feller had applied for a writ of prohibition to restrain the Minnesota State Board of Medical Examiners from further action in proceedings instituted to revoke, on the ground of alleged unprofessional and dishonorable conduct, a certificate issued to Dr. Feller enabling him to practice medicine in Minnesota. Dr. Feller had held that his conduct was a breach of professional ethics only, and was not unprofessional or dishonorable. The medical examiners had held that Dr. Feller, in claiming to be able to cure *all chronic* nervous diseases and diseases of the blood and skin of both sexes, *all* diseases of the eyes and ears without the use of injurious drugs or hindrance of the patient from business, *all* old, lingering constitutional diseases, and his use of terms such as *cured for life*, had published false statements which he knew to be false. The medical examiners held that Dr. Feller had published such statements *"with intent to deceive and impose on the public.* If true, this is unprofessional and dishonorable conduct of the grossest kind." Dr. Feller also charged that the board of medical examiners had exceeded its authority because it had cited him to show cause not only why his certificate should not be revoked, but also why he should not be debarred *forever* from the practice of medicine in Minnesota. The Minnesota Supreme Court, however, quashed Dr. Feller's application for a writ of prohibition, remarking that if Dr. Feller's certificate were revoked by the board, the legal effect would be forever to debar him from the practice of medicine in Minnesota, unless the statute itself were revoked or unless a new certificate were issued to him. See reference.[60]

**Comparison of the text of the Minnesota law of 1883 with the Illinois law of 1877 shows that in some sections the text is identical. Millard himself wrote (reference [31]) that the Minnesota law of 1883 was "a verbatim copy of the present Illinois Act, except that the exemption clause was five years instead of ten, which is the period of exemption of the Illinois Act." The two acts also differed in the nature of the licensing bodies and in penalties for violation of the law.

††The University of Minnesota Department of Medicine, apart from its powers as the state board of medical examiners as conferred by the law of 1883, could grant the degree of doctor of medicine to such persons as were able to qualify for the degree. The old Minneapolis College of Physicians and Surgeons, which opened in October, 1883, for the first five years of its existence did not grant the degree of doctor of medicine to any of its graduates; instead, it sent them to the University of Minnesota for graduation. Hence, graduates of the Minneapolis College of Physicians and Surgeons during that period received the doctorate in medicine from the University of Minnesota. See: Moore, J. T.: The College of Physicians and Surgeons. *Journal of the Minnesota State Medical Association and Northwestern Lancet*, 29:45-46, (Jan. 15) 1909.

†The Board of Regents, in creating the Department of Medicine, are said to have adopted the plan submitted to the Board on June 29, 1882, by Dr. William Watts Folwell (1833-1929), then president of the University of Minnesota; Dr. William H. Leonard (1825-1907), a pioneer homeopathic physician of Minneapolis; and Dr. Charles N. Hewitt (1835-1910), of Red Wing, founder of the Minnesota State Board of Health and Vital Statistics in 1872. See: Folwell, W. W.: *A History of Minnesota.* Saint Paul: Minnesota Historical Society, 1930, vol. 4, pp. 422-423.

medical examiners,[62] for the school as then organized offered no courses. Beard[9,10,11] wrote that the legal origin of the University of Minnesota Medical School was "the state constitution of 1853," but this is palpably an error, for Minnesota was not a state in 1853, and had no state constitution prior to 1857, as the monograph by Anderson and Lobb[8] plainly shows. Rather, the University of Minnesota Department of Medicine was specifically provided for in section 10 of chapter 3 of the territorial laws of 1851[2]; this was affirmed in section 10 of the revised territorial laws of 1851[38] and in section 2 of chapter 1 of the general laws of Minnesota of 1868,[6] as well as in section 2 of chapter 125 of the general laws of Minnesota of 1883.††[4]

But it was the licensure law of 1887[5] which drew Osler's attention and commendation. As chairman of a committee appointed to study medical licensure in the United States, Millard[30] in 1889 told members of the American Medical Association that he himself had drafted the bill to create the act of 1887, on the basis of some five years' experience as executive officer of the old board brought into existence by the previous act of 1883.** The act of 1887, in which Beard[11] also seems to have had a hand,†† was signed by Governor Alexander R. McGill (1840-1905) on February 28, 1887.[5,28,48] The law provided for a board of nine medical examiners, each of whom was to serve for three years, with the exception of those nine persons who constituted the original membership of the board. Of the latter, three were to serve for one year, three were to serve for two years, and three were to serve for three years, from the date of appointment by the governor. No member could serve for more than two terms; no member could be a member of any college or university which had a medical department.[5] The latter provision thus effectively prevented any member of the old board of medical examiners, created by the act of 1883 and still in existence up to the time of application of the act of 1887, from being appointed to the new board.°°

The first section of the law of 1887 required that two members of the board be homeopathic physicians,* but nothing whatever was said as to the qualifications of the other seven members; it was not even necessary legally, that they be physicians—an objection promptly pointed out by the *Journal of the American Medical Association.*[29] "The Governor . . . has taken the clause providing that two of the board shall be homeopaths to mean that there shall be just two homeopaths appointed and no more, and has followed that interpretation in these appointments," the *Northwestern Lancet*[36] observed.

The law of 1887 required anyone who wished to practice medicine or surgery in Minnesota to apply to the board of medical examiners for a license.[5] The candidate had (1) to undergo examination in a number of branches of medicine and the basic sciences† and (2) to present evidence of his or her attendance at three courses of lectures of at least six months each. A license to practice medicine could be granted only by consent of no fewer than seven of the nine examiners. A license could be revoked for "unprofessional, dishonorable or immoral conduct." Once granted, the license had to be filed with the clerk of court of the county in which the applicant proposed to

††But the Department of Medicine was not mentioned in chapter 80 of the general laws of Minnesota of 1860, which chapter provided for the government and regulation of the University of Minnesota. Section 10 of this law merely provided that "The University shall consist of such departments as the Board of Regents shall determine, subject to the provisions of this Act, and the same may be altered or changed as they may prescribe." See: An Act providing for the Government and Regulation of the University of Minnesota. In: *General Laws of the State of Minnesota, Passed and Approved during the Second Session of the State Legislature, commencing December seventh, One Thousand Eight Hundred and Fifty-Nine, and Terminating March Twelfth, One Thousand Eight Hundred and Sixty.* Faribault: Orville Brown, State Printer, 1860, pp. 264-268.

**In 1887 Millard was first vice president of the American Medical Association. Speaking before the Section on State Medicine of the association in that year, he remarked: "We have not an ideal Medical Practice Act in any State in the Union. The nearest approach thereto is the new Act of Minnesota. By the provision of this Act, every person commencing the practice of medicine must pass an examination and furnish satisfactory evidence of having taken three full courses of lectures of not less than six months' duration each." See: Millard, P. H.: The Propriety and Necessity of State Regulation of Medical Practice. *Journal of the American Medical Association,* 9:491-493, (Oct. 15) 1887.

††Actually, the bill to create the law of 1887 seems to have been framed by a joint committee of physicians of both the homeopathic and so-called regular persuasions. Dr. Chester Goss Higbee (1835-1908), a homeopathic practitioner, writing in the old *Medical Argus* of Minneapolis in 1893, declared that he "was a member of the joint committee of the two dominent [*sic*] schools of medicine, that framed the bill" of 1887. Dr. Higbee complained bitterly that someone had substituted an "and" for an "or" after the bill had been agreed upon by this joint committee, and he charged that what would have been simply a law permitting licensure by diploma had, by the substituted conjunction, been converted covertly into a law which required graduation from a reputable medical college and also examination by the board of medical examiners. See: Higbee, C. G.: The Medical Law of Minnesota. *Medical Argus,* 3:137-138, (Mar.) 1893.

°°Members of the old Minnesota State Board of Medical Examiners created in 1883 met for the last time in the State Capitol in Saint Paul on July 5, 1887; members of the new Minnesota State Board of Medical Examiners created by the act of 1887 met for the first time in the same place at the same time. See: *Northwestern Lancet,* 6:375-376, (July 1) 1887.

*Governor McGill appointed, in fulfillment of this particular clause, Dr. Henry C. Leonard (1849-1925) of Fergus Falls, and Dr. Frederick C. Bowman (1849-1938) of Duluth.

†In anatomy, physiology, chemistry, histology, materia medica, therapeutics, preventive medicine, practice of medicine, surgery, obstetrics, diseases of women and children, diseases of the nervous system, diseases of the eyes and ears, medical jurisprudence "and such other branches as the board shall deem advisable."

practice. Once a year each clerk of court had to send a list of all certificates on file in his office to the secretary of the Minnesota State Board of Medical Examiners, and the record kept by each clerk of court had to agree with the record for that county maintained by the secretary of the state board.

Physicians commissioned in the army or navy, physicians called to Minnesota for consultation from other states, and medical students practicing medicine under the direct guidance of a preceptor were exempt from the provisions of the act. Those physicians who had been licensed under the act of 1883 were automatically licensed by the act of 1887,[5] which repealed the law of 1883.[4]

Anyone who practiced medicine or surgery in Minnesota without a license from the new board, or who practiced contrary to the provisions of the act of 1887, was to be considered guilty of a misdemeanor and, if convicted thereof, could be fined not less than $50 nor more than $100, or could be imprisoned in the county jail for not less than ten days nor more than ninety days.[5] Both fine and imprisonment could be imposed on an offender. Justices of the peace and the respective municipal courts had jurisdiction over violations of the act; the respective county attorneys were to prosecute offenders.

Osler in his more extended remarks of 1889[39-42] had recognized that the power to regulate the practice of medicine rests with the state. But he had not approved of the practice whereby the governor of a state or the medical societies thereof appointed the medical examiners: "Theoretically, there can be no question (particularly in democratic communities) that a State board should be elective, not appointed by the Governor or the societies."[40]

What Osler wanted must be set forth in terms of the three different ways in which a physician might be licensed: (1) by the simple presentation of a diploma, (2) by examination of the candidate before a board of medical examiners appointed by the governor of a state or by the medical societies thereof, and (3) by examination of the candidate before a board of medical examiners elected by physicians themselves.

In 1889 Osler had abhorred the first scheme and had not been enthusiastic about the second one, but the third had won his untempered favor.[40] In 1892, three years later, his views were essentially the same,[43] yet it is patent that it is licensure by a state board appointed by the governor which prevails today, and not licensure by boards elected by physicians.

Osler's plan for licensure would have removed the regulation of medical practice further away from the sphere of the state government, and therefore from governmental jurisdiction, for his ideal "medical parliament" would not be concerned merely with licensure. It would, first, regulate "the minimum standard of education required in entering the profession."[40] Second, it would examine and license candidates for the practice of medicine. Third, it would carry out prosecution of irregular and unlicensed physicians and "exercise such additional powers as might, in the opinion of the framers of the bill, be thought justifiable." All these powers would reside in the elective "medical parliament" which Osler advocated.

Actually, however, Osler's "medical parliament" would possess what might be called plenary powers, for it would "take cognizance of all matters related to medical education, and, perhaps, although of this I am not so sure, of questions of public health within the State."[40] Such a concept seems rather distant from the theory of democratic control which Osler had advanced at the outset, for in its widest implications it would combine legislative, judicial and executive functions, to the exclusion of those representatives of the people who are elected by the ballots of all citizens.

The *Journal of the American Medical Association,* commenting on Osler's views in 1889, was quick to perceive the superiorities of a system in which the laws of the state itself would guide the actions of the state board of medical examiners, regardless of whether the examiners were appointed by the governor or elected by physicians legally authorized to practice.[25]

This journal, moreover, elaborated two points which it believed Osler had not considered sufficiently: (1) that any state board of medical examiners, however constituted, would fail unless the law of the state explicitly defined the minimal standard of general education necessary for entrance upon the study of medicine and also defined the minimal standard of medical requirements necessary for practice, and (2) that the powers of any state board of medical examiners should be purely executive and not legislative.[25]

The Saint Paul address of 1892[43] is much shorter than that of 1889[40]; it occupies but a single page in the *Northwestern Lancet*. But the central theme of a "medical parliament" appears once again, and strongly. "The election of a medical parliament by the medical profession to control medical affairs is alike to the interest of the practioner and the public."[43] He hoped Minnesota would create such a parliament as the state medical licensing body.[43]

Another thought advanced by Osler in his address of 1889[40] also drew the fire of the *Journal of the American Medical Association*.[25] Osler had proposed that all physicians, whatever their persuasion or training, be subjected to the same examination for licensure, with the single exception of the section devoted to therapeutics. In therapeutics, he thought, an eclectic physician might be examined in eclectic therapeutics; a regular physician might be examined in regular therapeutics; a homeopathic physician might be examined in homeopathic therapeutics.

This was untenable to the *Journal of the American Medical Association:* "On the contrary, every applicant should be examined and be required to furnish evidence of having a fair knowledge of all systems. No student of regular medicine should be licensed to practice unless he also understands clearly the distinctive facts and principles of homeopathy, eclecticism, and every other *ism* that he is to come in contact with among the people. And no student of any one of these pathys or isms should receive a license to practice unless he is also possessed of a good knowledge of the regular therapeutics as practiced by more than nine-tenths of the medical men of Europe and America."[25]

In his Saint Paul address of 1892, however, Osler repeated his contention: ". . . after all, the homœopaths only differ from the regulars in therapeutics. . . . And I do not differ more from my erring homœopathic brethren in the matter of therapeutics than I do from many of my regular brethren who write shot-gun prescriptions a yard long and fire them indiscriminately at their suffering patients."[43] He was quite willing that all candidates for licensure be subjected to the same examination in anatomy, physiology, surgery, obstetrics, pathology and practice, for "there is no homœopathic anatomy or physiology; no homœopathic surgery; no homœopathic midwifery; no homœopathic pathology; no homœopathic practice; there is only therapeutics of special difference."[43]

Osler's rather bizarre conception of the examining board for licensure in medicine never was accepted in the United States. By 1895—three years after he had spoken in Saint Paul—twenty-one states had the examination system for licensure, with the authority of the state government buttressing the examiners.[55] Fourteen other states would allow only graduates of accredited medical colleges to practice medicine. The "medical parliament" was nowhere in existence, nor, as Osler conceived it, does it exist in this country today. In medical licensure the authority of the state is supreme.

Yet Osler's preoccupation with medical licensure half a century ago should not obscure his real objective, which was of the utmost virtue and which has been largely attained today. For licensure in itself he probably cared very little. What vitally interested him was the improvement of medicine itself. If a physician could be licensed to practice medicine merely by the presentation of his diploma, then the medical college which had graduated him was, in effect, the licensing agent. Such a medical college might be a first-rate institution or a school of indifferent standards or even fraudulent conduct. A Philadelphia newspaper editor in 1880 encountered no difficulty whatever in purchasing two degrees of doctor of medicine, two doctorates in law, one degree of master of electrotherapeutics and one degree of doctor of sacred theology, from among six institutions duly incorporated by the state.[55]

If, on the other hand, the physician were required to undergo examination by the state, without regard to the institution from which he had received his diploma, then each school of medicine would be forced to offer instruction of such integrity that its graduates could reasonably expect to satisfy by examination any requirements a state licensing board might exact of them. Poor schools inevitably would decline; the quality of the training of the physician would improve; medicine itself would benefit immeasurably. This was Osler's primary concern. No one today can deny that it was eminently sound.

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THE ROLE OF THE ELECTROCARDIOGRAM IN CARDIAC DISEASE

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ELECTROCARDIOGRAPHY has been used clinically for about fifty years. Its use stems back to the discovery that when a frog's heart contracts, it produces an electric current. For many years the electrical current of the hearts of animals was studied by use of a very crude apparatus. At first, the electrocardiogram was helpful clinically mainly in interpretation of cardiac arrhythmias. Great progress has been made in the mechanism and efficiency of the electrocardiograph, and greater progress has been made in the interpretation and clinical application of the electrocardiogram, especially in the past few years. Few fields of medicine have seen more noteworthy development than has electrocardiography.

Electrocardiography has developed to the point at which cardiac examination is not considered complete unless an electrocardiogram is made and, in the main, this is essentially the correct attitude. At times, the information furnished by an electrocardiogram is just as accurate and definite as that furnished by any known laboratory procedure. There are instances in which the electrocardiogram alone will enable the physician to make an accurate diagnosis. However, because of this fact, electrocardiography has been overemphasized and its use is often abused. Today, many electrocardiograph machines are in the hands of physicians who are not sufficiently trained to interpret electrocardiographic tracings correctly. Often, some insignificant changes in an electrocardiogram are incorrectly interpreted, and on this false basis alone a diagnosis of serious heart disease is made, with the result that the patient is needlessly condemned to a life of invalidism.

In the present era of mechanical efficiency, the unfortunate tendency among some physicians is to hope for an automatic mechanical method that will make the diagnosis without recourse to the standard and proved methods of examination. Dr. H. A. Wilmer's cartoon (Fig. 1) illustrates this point. This shows a physician who is too busy to obtain a history from the patient but who will make a diagnosis on the basis of the electrocardiogram alone—a very dangerous procedure. It is basically unsound and poor medicine for anyone to make clinical diagnoses on the basis of electrocardiograms alone.



"The doctor doesn't have time to take a history but he'll phone you the diagnosis tomorrow."

Fig. 1. A scene that is enacted too often in modern clinical medicine.

It should be remembered that the electrocardiogram is only a *report* of a laboratory procedure, and a very delicate procedure at that. The information derived in this manner should be used to supplement, and should be applied in conjunction with, information obtained from other sources, including (1) a carefully taken history, which is the most important part of the examination of patients who have coronary disease, (2) a thorough physical examination, (3) roentgenologic examination and (4) examination of the patient's blood. It should be realized that although the results of an electrocardiogram may be perfectly normal, the patient may still have very serious cardiac disease. A very important and practical test, and often a neglected one, is the amount of physical effort the heart can stand without the production of symptoms. It often is difficult for the physician to make a correct cardiac diagnosis, even when he utilizes the information gained from all available sources.

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CLINICAL-PATHOLOGICAL CONFERENCE

CHORIOEPITHELIOMA, MIXED MESODERMAL TUMOR, AND LEIOMYOSARCOMA OF THE UTERUS

Three Case Reports

HAROLD H. JOFFE, M.D., PHILIP F. ECKMAN, M.D., and ARTHUR H. WELLS, M.D.
Duluth, Minnesota

DR. A. H. WELLS: We wish to present the case studies of three patients with rare neoplasms of the uterus, with a concise review of each subject.

Chorioepithelioma

DR. P. F. ECKMAN: The patient (No. 34843) aged thirty-one, was admitted on November 10, 1945, in her first trimester of pregnancy, because of bleeding. Her first and second pregnancies in 1937 and 1942, respectively, were uneventful. She was treated with bed rest, sedation and progesterone. The bleeding ceased and she was discharged on November 25, only to be admitted a day later because of a recurrence of painless bleeding. The uterus was found to be firm, about the size of a three to three and one-half month pregnancy. The cervix was firm and closed. She was again treated conservatively, with cessation of bleeding, and discharged on December 3, 1945.

Three days later, on December 6, she was readmitted with bleeding and cramp-like pains. While in the hospital, two masses of placental tissue with grape-like refractile cystic protrusions were passed. Microscopic examination revealed swelling and hydroptic degeneration of the chorionic villi and large areas of necrosis, typical of a hydatidiform mole. There was no evidence of chorioepithelioma. A dilatation and curettage was done, which revealed no evidence of malignancy. The patient was discharged six days later on December 12, 1945.

The Friedman test, using 0.1 c.c. of urine, was positive on two occasions between her last discharge and readmission on January 15, 1946. A total hysterectomy was done on January 16.

Pathological Report

DR. A. H. WELLS: The uterus measured 11 by 7 by 5.5 centimeters. The outer surface was quite smooth, and the walls were slightly thickened. The endometrium was soft, gray and not unusually thick. There was a slight bulging of the endometrium in the fundus which was found to be due to an encapsulated, soft, gray, friable tumor mass in the myometrium, measuring 1 cm. in diameter and about 0.8 cm. below the endometrium (Fig. 1). No other tumor masses were noted, and the cervix was not unusual. Microscopic examination through this tumor nodule revealed large numbers of syncytial and decidual cells, both of which were embryonic in type with hyperchromatic and anaplastic nuclei, typical of a chorioepithelioma (Fig. 2). The lesion appeared to be fairly circumscribed, and no other malignant change was found in other parts of the uterus.

The patient was discharged on January 27. A Friedman test, at six months and at one year later, was negative. The patient, two years after her hysterectomy, is alive and well.

Discussion

DR. R. F. ECKMAN: Chorioepithelioma is a very definite and highly malignant disease entity, but is encountered with great infrequency. How rare it is may be inferred from the fact that during the thirty years following its original description by Stanger as a clinical entity, there were only 571 collected cases in the world literature. By a strange set of circumstances, it has fallen to my lot to attend two such cases. In reporting a case of chorioepithelioma of the uterus, Curtiss stated that he had seen only four other cases of proved chorioepithelioma of the uterus, all of which were studied only from pathologic aspects. In sixteen years of clinical experience he had seen but one case of chorioepithelioma diagnosed during life, although perhaps twenty patients with provisional diagnosis of this condition had been referred to him, in which the diagnosis was not confirmed.

In addition to the case which you have just heard reported, I would like to give briefly a case history of my other patient who was not as fortunate as was the one already described. This was a young woman, aged twenty-three, who was first seen in a rooming house about September 1, 1932, soon after a spontaneous delivery of a normal male baby at term. The delivery had been entirely unattended, and she had had no prenatal care whatever. After expressing the placenta, she was sent to St. Mary's Hospital, where her stay was prolonged to fourteen days because of some low grade fever.

When she presented herself for postpartum examination on October 3, 1932, a presumptive diagnosis of retained placental tissue was made, and she was returned to the hospital and curetted under anesthesia. A cosiderable amount of partially decomposed tissue was removed, which was reported by the pathologist as endometritis with decidua. She left the hospital five days later with the bleeding checked.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

She remained quite symptom-free until the first part of January, when bleeding recurred. This was followed by fever, weight loss, and weakness. On pelvic examination the uterus was found to be enlarged and softened. She was readmitted to the hospital. The patient appeared obviously very septic, and a Friedman test was reported as positive. Because of the enlarging uterus, a positive Friedman test, and her septic condition, after consultation it was decided not to invade the uterus for diagnostic or therapeutic reasons at this time. Supportive and expectant treatment consisted of rest, fluids, blood transfusions, et cetera. During the next two months there was only partial abatement of her septic state, and during this time it became evident that the enlarging uterus was not keeping pace with that of a normal pregnancy. A Friedman test was again reported strongly positive. A histologic diagnosis of chorioepithelioma was established on endometrial curettings by the pathologist, Dr. George Berdez, on March 29, 1933. Exploratory operation and total hysterectomy was performed by Dr. W. A. Coventry on April 12. Due to the patient's poor general condition, death ensued within twenty-four hours. Examination of the specimen and autopsy revealed an invasive chorioepithelioma penetrating the uterus and invading the pelvic and iliac veins. Multiple emboli were found in the lungs, along with three metastatic nodules.

A comparative consideration of these two cases is most interesting from several points of view. One case followed labor at term and the other followed a hydatidiform mole. Polloson and Violet, in discussing the 455 cases in the literature in 1913, pointed out that 45 per cent of chorioepithelioma follow hydatid mole, whereas 21 per cent occur following labor at term. Another 30 per cent follow abortions, and 2.5 per cent occur after ectopic gestation. It has also been pointed out in the literature that a period of latency as long as three or four years has occurred following pregnancy.

These two cases illustrate very pointedly the difference in diagnostic approach and resultant handling because of development and better appreciation in the laboratory procedure. The quantitative fractional approach of the Ascheim-Zondek or Friedman test was not thought of in 1932 or 1933 at the time of this first case; in fact the positive Friedman test at that time served only to confuse the diagnosis in our minds by suggesting strongly the presence of another pregnancy as a threatened or probably incomplete septic abortion.

To approach the situation in the second case with the radical surgical procedure that had to be done, in the entire absence of all objective evidence of such a rare condition as chorioepithelioma, other than the evidence offered by a laboratory procedure, required much courage of one's convictions. The perfectly normal-appearing pelvis and uterus found upon opening the abdomen would cause some hesitation in going ahead with a total hysterectomy in this young woman. Only after finding this small malignant tumor entirely within the wall of the uterus did the futility of another diagnostic curettement appear evident, and such a procedure would only have served to confuse diagnosis further and increase indecision. Certainly in such cases, carefully controlled laboratory procedure may offer the only positive clue to the diagnosis and treatment.

Dr. H. H. Joffe: The etiology is obscure,[6,16] and the precursors may be full term pregnancy, abortion or hydatidiform mole,[1,6,10,14,16,20,25,30] as mentioned by Dr. Eckman.

Chorioepithelioma occurs almost entirely during the child-bearing period, in contradistinction to most of the other malignancies of the female genital tract.[6] In combining three series[6,20,30] totaling fifty-six chorioepitheliomas, forty-two (75 per cent) occurred in multiparous, and fourteen (25 per cent) occurred in primiparious women. The age in two series ranged from nineteen to thirty-nine[6] and seventeen to fifty-one[30] years.

To simplify the data on the precursors of chorioepithelioma, we have taken the liberty of combining five series[1,6,20,29,30] totaling 103 cases. In this combined group, sixty-three (61.1 per cent) followed hydatidiform moles; however, five were coexistant with the mole; twenty-three (22.4 per cent) followed abortion; ten (9.7 per cent) followed full term pregnancy, one of which was associated with pregnancy, and in seven (6.7 per cent) the precursor was unknown.

Hertig[14] found the ratio of hydatidiform moles to the number of deliveries to be 1 in 2,000. The ratio of chorioepithelioma to the number of obstetrical and gynecological patients varies with different series. Acosta[1] reports thirty-two cases of chorioepithelioma out of 21,765 obstetrical cases admitted to the Philippine General Hospital at Manila, or a ratio of one for every 680 obstetrical patients. A more detailed analysis revealed one chorioepithelioma for every 9.14 cases of mole, 474.44 cases of abortion and 4,563 cases of labor. Smith,[30] however, reports only fifteen cases out of a total of 117,260 obstetrical and gynecological cases admitted to the Charity Hospital at New Orleans, or a ratio of one chorioepithelioma in every 13,958 obstetrical and gynecological admissions. This closely parallels the report of Schumann[29] in which the ratio of chorioepithelioma in Philadelphia was roughly one to 13,847 pregnancies.

At this hospital over an eleven-year period, out of 12,722 patients delivered, there were eight (0.062 per cent) hydatidiform moles and one (0.0078 per cent) chorioepithelioma.

The early signs and symptoms are not characteristic and frequently resemble those associated with retained placenta, sepsis and involution.[6] The destruction of blood vessel walls by the invading anaplastic trophoblast elements produces the common and initial symptom of vaginal bleeding.[1,10,16,20,30] The bleeding may be irregular, sudden, severe or depleting.[6] In combining three series[6,29,30] totaling fifty-six in number, vaginal bleeding was the initial symptom in fifty (90.9 per cent) of the cases. Rosenbloom[27] reported a case of fatal intra-abdominal hemorrhage as the result of uterine rupture and extrusion of tumor tissue into the peritoneal cavity. Other symptoms and signs, such as nausea,



Fig. 1. Cut surface of chorioepithelioma is seen as a rounded dark lesion located 0.8 cm. below the endometrial surface or free margin.

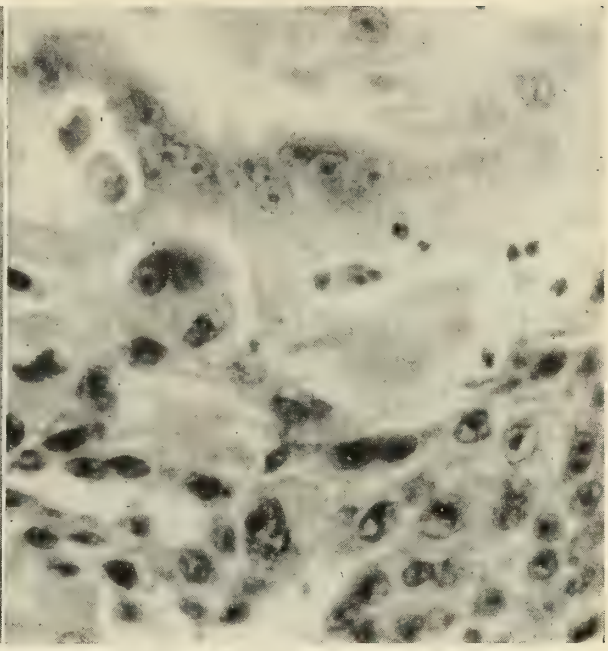


Fig. 2. Photomicrograph of anaplastic syncitial and Langerhan's cells of chorioepithelioma.

vomiting and enlarged uterus are encountered.[10,20,30] Pain is usually a late manifestation,[6] whereas, cough, chest pain, hemoptysis, headache and blurring of vision are indications of metastasis.[6,16] Bluish nodules in the vagina or vulva which ulcerate or bleed freely should arouse a high degree of suspicion.[16]

The early diagnosis of a hydatidiform mole cannot be overemphasized, but the immediate detection of a chorioepithelioma is of paramount importance. The diagnostic aids at our disposal are dilatation and curettage and the biologic hormone-urine tests. The diagnosis cannot always be established by a dilatation and curettage, because small growths or deep implantation can easily be missed.[16] The presence of anaplasia and invasion of Langhans and syncytial cells is diagnostic.

The urine in cases of hydatidiform mole and chorioepithelioma contains excessive amounts of gonadotrophic hormone which is the basis for the reaction in the biologic tests.[28] The qualitative and quantitative method have been used, however, the latter is a more reliable aid to early diagnosis.[25,28,30] Schoeneck[28] in order to secure normal standards as a basis for a quantitative test used the urine from 149 pregnant women in amounts varying from 0.0125 to 5.0 c.c. and determined the minimum amount necessary at various stages of normal intra-uterine pregnancy which would give a positive Friedman test. To avoid confusion and for practicability, the standards were expressed in terms of the actual amount of urine required and not the widely used terminology of the units of hormone per given amount of urine. In the absence of hyperemesis gravidarum and multiple pregnancy, a positive test was never obtained with amounts smaller than 0.05 c.c. Smith[30] likewise reports that a postive test with less than 0.05 c.c. of urine is indicative of a malignancy.

In one series[6] the average length of time between the occurrence of the precursor and the diagnosis of malignancy was nineteen months. In another series of forty-four collected cases[25] the interval between the passage of a mole and the diagnosis of chorioepithelioma varied from six days to five and one-half years. However, in the same series, in forty (91 per cent) of the cases the diagnosis was established by means of the biological hormone test within twelve months. The importance of monthly or trimonthly tests cannot be overemphasized. A single negative test does not justify its discontinuance.[25]

A positive biologic test for weeks after delivery of a full term pregnancy or following an abortion, or for six weeks or longer following the passage of an hydatidiform mole, is strong evidence of a malignancy.[6,25]

In thirty-six collected cases with recovery, the chorionic hormone test was negative in thirty-four (95 per cent) of the cases in less than three months and in twenty-four (66 per cent) in less than thirty days.[25]

The accepted method of treatment is a panhysterectomy; however, the removal of the primary tumor does not produce reabsorption of the metastases.[1] Dockerty[7] reported a case in which cerebral symptoms were the first indication of metastases, four years after the removal of the primary tumor. In one series,[1] twenty-one of thirty-two cases (62.5 per cent) showed metastases, of which eighteen (56.2 per cent) were to the lungs.

Mixed Mesodermal Tumor

Dr. F. D. Weeks: The patient (No. 41254) was first seen by me in October, 1931, at the age of forty-three because of scanty menstrual periods of several years duration and an associated bearing-down sensation. Physical examination revealed a moderate degree of arteriosclerosis with a blood pressure of 142/100. A large, tender, irregular shaped uterus was felt. A dilatation and curettage of the uterus was done, followed by the insertion of 50 milligrams of radium for twenty-four hours. A diagnosis of a papillary adenoma was made by the Department of Pathology of the University of Wisconsin.

A re-examination in June, 1932, showed a progression of the hypertension with a blood pressure of 186/118 and cardiac enlargement. There had been no further vaginal bleeding, and a pelvic examination revealed a small uterus with a slight enlargement at the right cornu. The cervix was not unusual. A pelvic examination about six months later, in December, 1932, revealed no change.

The patient was seen on many occasions during the next fifteen years. In October of 1947 she complained of lower abdominal discomfort. The blood pressure was 234/122, with albumin and casts in the urine. Pelvic examination showed no increase in the size of the uterus. She was again seen on December 26, 1947, at the age of fifty-nine because of vaginal bleeding of five days' duration after sixteen years of amenorrhea. Physical examination at this time revealed a blood pressure of 230/120. Urinalysis was essentially negative except for occasional granular casts. The red cell and white cell counts and hemoglobin were within normal limits. The uterus was found to be large, irregular, freely movable, but somewhat tender. There was a soft tumor mass extruding from the opened external os. On December 31, 1947, a supravaginal hysterectomy was performed. The tumor which projected through the external os was easily removed through the supravaginal procedure, leaving normal cervical tissue for closure.

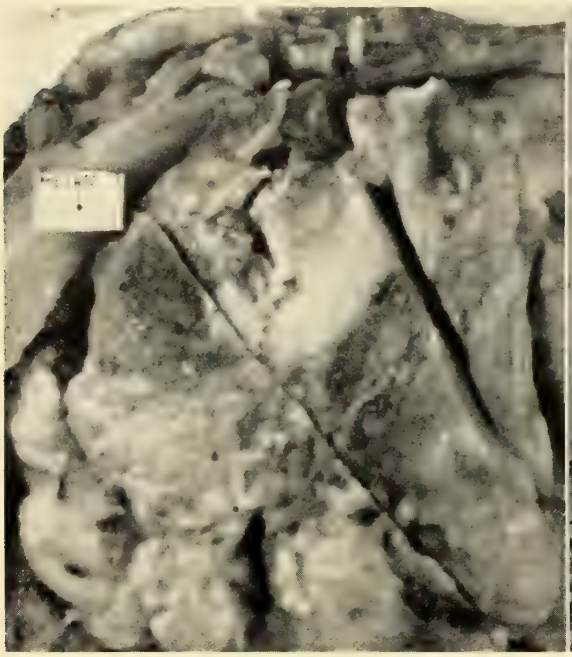


Fig. 3. Half of amputated fundus of uterus cut open exposing globular fibrous neoplasm (mixed mesodermal tumor) encased in thinned-out uterine walls.

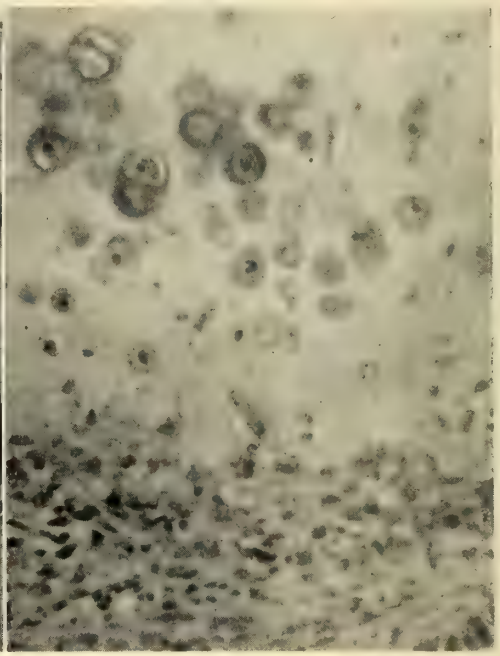


Fig. 4. Photomicrograph of area with cartilage cells and matrix.

Pathologic Report

Dr. A. H. Wells: The uterus measured 14.1 by 11.6 by 9.5 cm. The myometrium measured 1 cm. in thickness and formed a shell-like capsule incasing the nodular, grayish tumor mass measuring 13 by 10.5 by 8.5 cm. (Fig. 3). There were definite cystic areas in which the cysts measured from 1 mm. up to 0.4 cm. in diameter. Other areas of the tumor had a rather firm grayish homogenous surface. The center was soft and necrotic. Microscopic examination revealed anaplastic smooth muscle, fibrous connective tissue, cartilage (Fig. 4) and striated muscle cells, as well as columnar epithelial lined glands. In many areas there was marked anaplasia and in addition, large areas of necrosis, mitotic figures and tumor giant cells. A diagnosis of mixed mesodermal tumor of the uterus was made. No fallopian tubes or ovaries accompanied the specimen.

Discussion

Dr. H. H. Joffe: These tumors are of mesodermal origin, in contradistinction to the trigerminal teratomas. There is no unanimity as to their histogenesis. Whether they arise from Müllerian cell rests or tissue pulled

down by the Wolffian duct during its embryonic descent, is of academic interest.[12,17,18,22,23] The all-important feature is that these pleuripotential mesenchyme cells have retained their capacity to differentiate into a variety of mesodermal elements which are not normally found in the uterus, such as striated muscle, cartilage, bone myxomatous and sarcomatous tissue, et cetera. The stimulus to neoplasia and growth is unknown but is probably hormonal in nature.[22]

The tumor develops at one of three sites: corpus, cervix or vagina. Glass,[12] in reviewing ninety-four cases in the literature, found the corpus of the uterus as the primary site in 58 (61.7 per cent) and the cervix in thirty-six (38.3 per cent). Practically all of the corporal tumors occur after the menopause.[2,12]

The majority of the cervical tumors appear during active sexual life.[2,12] Amolsch[2] states that all reported cases of vaginal tumors occurred before the age of twenty-two years, with the majority occurring before the age of two years.

The tumors arising in the cervix appear as polyps and those in the corpus as massive intrauterine polypoid growths.[3,12] They are usually composed of a variety of mesodermal elements. Lebowich and Ehrlich[8,17] insist on the presence of embryonal myoblasts or striated muscle tissue in combination with one or more heterologous elements as the histologic criterion. On that basis they only accepted twelve cases as mixed mesodermal tumors in their review of the literature. It does seem unreasonable to exclude the majority of these tumors on such arbitrary histological criteria, since they are a distinct pathologic entity and all follow a rather typical clinical course.[22] Glass,[12] in reviewing ninety-four cases in the literature, found myxomatous tissue in twenty-seven out of thirty-six (75 per cent) tumors involving the cervix and in forty-one out of fifty-eight (70.7 per cent) involving the corpus. Cartilage was noted in 55.6 per cent of cervical, and in 60.3 per cent of corporal tumors. Striated muscle was found in 30.6 per cent of cervical, and in 41.4 per cent of corporal tumors. The stroma was composed of spindle cells in 75 per cent of cervical, and in 94.8 per cent of corporal tumors. Other mesodermal elements present were smooth muscle, bone, fat, round and giant cells in the stroma.

The symptoms and physical findings are essentially the same as with other malignancies of the uterus, namely, vaginal bleeding, saguino-purulent discharge and pressure symptoms if the mass is large or invades surrounding structures.[8,12,17,18,24] The diagnosis rests solely on the heterologous histologic picture and may be confused with a fibromyoma undergoing cartilagenous change or ossification, myosarcoma, rhabdomyoma, teratoma, carcinosarcoma, chondroma, myxochondrosarcoma and myoblastoma.[8] Carcinomatous degeneration is rare, however. Ehrlich[8] reported a case with superimposed adenocarcinoma, bringing the total of reported cases in the literature to fifteen. Glass[12] reported one case with associated fibroids, only eight such cases being previously described.

Local recurrence is almost a constant feature, and metastases to the vagina, bladder, parametria, broad ligaments, peritoneum, pleura, lungs and liver are common.[2,8,12] In a review,[12] metastases occurred in twenty-six out of thirty-six (72.2 per cent) cervical tumors, and in thirty-five out of fifty-eight (60.3 per cent) corporal tumors. Local recurrences occurred in 50 per cent of cervical, and in 27.6 per cent of corporal tumors. Although the lungs and pleurae are frequent distant sites for secondary growths, they rarely reproduce the parent tumor, but instead develop as a spindle cell or myxosarcoma.[12]

These neoplasms are malignant out of all proportions to their histological appearance, with a mortality of about 95 per cent regardless of therapy.[2,3,12,17,24] There are no five-year cures in the literature,[8] and the average duration of life following removal is about one year.[12]

The treatment consists of a panhysterectomy followed by irradiation, but then in view of the high mortality, is only a palliative measure.

Leiomyosarcoma

Dr. H. E. Bakkila: This fifty-eight-year-old housewife (No. 4016) was admitted to the hospital on February 20, 1948, complaining of a gradual increase in the size of the abdomen, an abdominal mass, a sensation of marked pelvic weight and a loss of 20 pounds since November, 1947. There was moderate anorexia, some recent urgency and questionable incontinence of urine. During the month prior to admission, there was increasing dyspnea.

Physical examination revealed a diffuse nontender enlargement of the lower abdomen which was firm and somewhat nodular. There was flatness to percussion, absence of ausculatory sounds, and no shift of the tumor mass with change of position. On pelvic examination the tumor mass was found to fill the entire pelvis with pressure on the uterus, vagina and rectum.

The urinalysis was essentially negative. The hemoglobin was 5.75 grams, with a red cell count of 2,190,000. The blood Kline test was 4-plus. A flat plate of the abdomen on February 21 led to the conclusion of intraperitoneal fluid or an intra-abdominal tumor. A chest film on February 26 was diagnosed metatastic lesions in the left lung.

The patient was prepared for operation with five blood transfusions, and on March 3, 1948, an exploratory laporotomy revealed a huge retroperitoneal mass rising out of the pelvis. A portion of the tumor mass had to be resected in order to close the abdominal wall. During the operation she received 1,000 c.c. of blood, but in spite of this her blood pressure gradually fell, and she expired approximately one hour later.

Pathologic Report

Dr. A. H. Wells: The necropsy revealed a huge nodular tumor mass weighing 6,000 grams, which formed a tight mold of the entire pelvis. The peritoneal cavity contained 2 liters of blood. The tumor mass extended mainly up the left side of the abdominal cavity to the diaphragm and displaced the abdominal viscera to the right. There were only traces of what appeared to be myometrium, visible in the form of strands separated



Fig. 5. A portion of cut surface of the leiomyosarcoma.

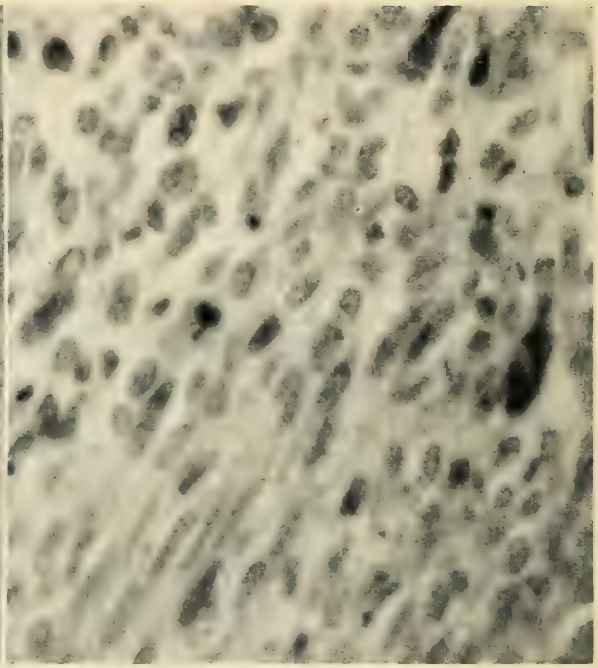


Fig. 6. Photomicrograph with anaplastic spindle cells, mitotic figures and tumor giant cells of leiomyosarcoma.

by tumor tissue. The cervix was not enlarged, and it blended with tumor tissue. Its os had disappeared. On cut section (Fig. 5) the nodules were made up primarily of homogeneous, rather firm, grayish tissue with extensive areas of cystic degeneration and occasional discrete yellow areas of necrosis measuring up to 6 cm. in diameter. Microscopic sections (Fig. 6) revealed a very highly anaplastic cellular growth, made up of elongated narrow nuclei with scanty cytoplasm streaming out at the poles. Where maturation could be found, the cells were typical smooth muscle in origin. Many mitotic figures and tumor giant cells were noted. Both lungs revealed typical metastatic tumor nodules, and both kidneys revealed a Grade I hydroureter and hydronephrosis. There was a Grade II syphilitic aortitis.

A diagnosis of leiomyosarcoma of the uterus with metastases to the lungs was made.

Discussion

Dr. H. H. Joffe: Leiomyosarcomas may originate in any part of the uterine wall, in the endometrium, adjacent connective tissue or in a leiomyoma, but they are commonly of myometrial origin.[4,5,24]

There is a diversity of opinion as to whether these tumors are malignant from their onset or whether the malignant change occurs in an originally benign tumor.[4,5,10,21,24]

Kimbrough[15] in reviewing 3,388 uteri removed for myomata found a total of forty-three (1.27 per cent) sarcomas, of which twenty-six (0.76 per cent) had developed in pre-existing leiomyomata and seventeen (0.51 per cent) were primary. Randall[26] found thirty-nine sarcomas against 3,686 leiomyomas and 577 carcinomas of the uterus. Of the thirty-nine sarcomas, twelve (0.32 per cent) were associated with myomas, and twenty-seven (0.73 per cent) occurred in uteri showing no leiomyomata. The ratio of leiomyosarcoma to carcinoma was one to 15.6, and one to ninety-six for leiomyomata. Other reports place the ratio of leiomyosarcoma to carcinoma as one to forty-three[32] and one to fifty.[5] Novak,[24] in reviewing 26,973 case specimens of uteri, found 6,981 (25.9 per cent) leiomyomata, 241 (0.89 per cent) adenocarcinomas of the fundus, 1022 (3.8 per cent) carcinomas of the cervix, and 59 (0.22 per cent) sarcomas. The incidence of sarcomatous change occurring in myomas was 0.56 per cent. Other series show a higher incidence of sarcomatous change in pre-existing leiomyoma, varying from 1.35[33] up to 4.8[11] per cent. A fair average would probably fall between 0.5 to 1.5 per cent.[4,21,24]

During the eleven-year period from 1937 through 1947, 816 uteri were removed at St. Luke's Hospital for leiomyomata. In this group, three (0.36 per cent) were sarcomatous. Although this series is too small to draw any definite conclusions, the incidence at this hospital closely parallels the figures reported in some of the larger series.

The majority of these tumors occur at menopause with the highest incidence during the fifth decade of life.[10,11,15,24,31]

Mural sarcoma may arise as a nodular and fairly circumscribed tumor,[24] and since they vary greatly in their appearance, it is difficult to recognize them.[11,24] However, because of the frequency of leiomyomata uteri, there is a tendency on the part of surgeons to

be careless in their examination at the time of surgery.[31]

The more frequent occurrence of corporal than cervical leiomyoma explains in part at least, the predelection of sarcoma for the corpus of the uterus.[24]

The sarcomatous changes occur most frequently near the center of the myoma, giving it a raw pork or brain-like appearance instead of the glistening whorl like nature of a myoma.[24,32] Wheelock[33] states that the following findings at the time of surgery should arouse suspicion of a sarcoma in a leiomyoma:

1. Unusual friability of the broad ligament.
2. Unusual vascularity of the tumor.
3. The absence of a sharp line of demarcation between the tumor and the myometrium.
4. The opaque pork or brain-like appearance instead of the usual glistening whorl-like appearance.

The microscopic picture is characteristic of sarcomas, that is, highly cellular with wide variations in the predominate type of cell present, which may be round, spindle, mixed or giant cells.[11,21,24] Many observers feel that there is a direct correlation between the number of mitotic figures and the degree of clinical malignancy.[4,9,15,24]

Th clinical symptoms are not distinctive and resemble ordinary leiomyomata, so that most of the cases are not diagnosed until examined pathologically.[9,21,24] In a review of forty-three cases at the Lahey Clinic,[31] the chief complaints were: altered menses in twenty-one (49 per cent), pelvic pain and enlarging abdomen in nine each (21 per cent), urinary frequency in eight (19 per cent), and vaginal discharge in two (5 per cent) of cases. Abnormal bleeding may be entirely absent, especially if the endometrium is not involved. The vaginal discharge, early, is thin and watery; later it becomes serosanguinous and foul. Pain is a late manifestation of infiltration into adjacent tissue.[24]

The total five-year salvage in forty-three sarcomas at the University of Pennsylvania Hospital[15] was 34.3 per cent, as compared to 28.5 per cent in another series.[31] Novak[24] followed fifty out of fifty-nine cases and found fifteen (30 per cent) living at the end of fifteen years, and twelve (24 per cent) at the end of ten years. Kimbrough[15] found that the percentage of five-year cures were: (1) three times as great in sarcomatous degeneration of a myoma than in a primary sarcoma, (2) three times greater in the younger women as compared to those operated on after menopause, (3) four times greater in those tumors showing a low mitotic count, with recurrences, two times as frequent in the group showing a large number of mitotic figures.

Metastasis to distant organs, although not too frequent, do occur.[10,13] However, metastasis to bone is extremely rare, with Brooke[4] reporting the fourth such case.

Panhysterectomy with bilateral salpingo-oophorectomy, followed by deep x-ray therapy, is the accepted form of treatment.

Summary

We have presented a case study of each rare neoplasm of the uterus—(1) chorioepithelioma, (2) mixed mesodermal sarcoma, and (3) leiomyosarcoma— and have given a brief review of the literature on each subject.

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History of Medicine In Minnesota

A HISTORY OF MEDICINE IN SCOTT AND CARVER COUNTIES

Biographical Dictionary

(Continued from June issue.)

George F. Mish was a physician and surgeon who settled in Belle Plaine, Scott County, in the year 1858. He remained but a short time.

L. Gilbert Mitchell settled in Carver County about 1886. He lived first in Waconia, then moved to Jordan, Scott County, in 1890. He was well liked there and gained an extensive practice in Jordan and the vicinity. During this time he made connections in Shakopee, and in 1893 he located there to take Dr. Entrup's place after the latter's death. He remained there for several years, then moved to Mound. During his stay in this territory, he acted in the capacity of health officer of Waconia during a dangerous scarlet fever epidemic in 1887, and also served as treasurer of the pension examining board at Shakopee. He was the son of Dr. S. H. Mitchell of Minneapolis.

Gerald R. Moloney was born in 1847 in Ireland, where he attended the national schools and completed his course of studies in Dublin. In December, 1872, he arrived at Belle Plaine, Scott County, and early the next year he went to Minneapolis. There he studied medicine under Dr. Hutchinson until the following autumn, when he attended lectures at Bellevue Hospital Medical College, New York City. The next summer he studied in Saint Paul under Dr. C. E. Smith, and in the fall returned again to New York, graduating in February, 1875, from the Medical Department of the University of the City of New York. He was a successful competitor in an examination at St. Vincent's Hospital of New York and was duly appointed assistant house surgeon. In the fall of 1875 he opened an office at Belle Plaine, Scott County, where he remained for more than fifty years and where in 1877, he opened a drug store. He had a very extensive practice and became one of the prominent businessmen of the town as well as one of the county's leading physicians. One of his first services in public office was in the capacity of superintendent of schools in Belle Plaine. For many years he served on the pension examining board at Shakopee, serving as president for the year 1883 to 1884. He was succeeded by Dr. Hartley in 1897. In the year 1900, Dr. Moloney and G. A. DuToit of Chaska purchased all the stock in the State Bank of Belle Plaine and Dr. Moloney was made vice president. He continued to practice medicine at Belle Plaine until his death, on July 18, 1927, in an automobile accident.

L. B. Morrow came to Shakopee to practice medicine in 1867. He was at first a partner of Dr. Rouse. After a few months Dr. Rouse moved into the house formerly occupied by Dr. Risley and had his office there. Dr. Morrow had taken over the New Drug Store, which he operated for a short time in

connection with his practice. He remained in Shakopee for several years. At one time he practiced in Hudson, Wisconsin, and also in Saint Paul. He died in Saint Paul.

J. F. Mulholland came to Jordan, Scott County, in 1881 and was, for the first two months of his residence, a partner of Dr. Walter of that town. Dr. Mulholland was a graduate of the Chicago Medical College in 1879 and was an intern in the Mercy Hospital of Chicago. Not long after his arrival in Jordan there was a severe scourge of diphtheria in the county and he and Dr. Walter were kept busy attending the sick. In February, 1882, he was appointed surgeon for that division by the Minneapolis and St. Louis Railway Company. He was active in local affairs to the extent of speaking before such organizations as the Literary Society and the Teachers Association. In 1895 he was appointed to the pension examining board in Shakopee. He died in Jordan on August 23, 1919.

Andrew Naegeli was graduated from the Medical College of Indiana in 1885 and he settled in Chaska in 1886. His card announced, "Night and day calls in the city or country promptly attended to," and he built up a good practice after a short time. In 1890 he moved to Minneapolis to take the place of Dr. Hefti. After a year's stay there, he went to St. Cloud, but in 1898 he again came into the Minnesota Valley region and located at Hutchinson.

S. J. Northrop came to Jordan, Scott County, about 1870 from which place he had a wide practice in both Scott and Carver Counties. About 1882 he moved to Norwood, Carver County. At that time he met a considerable amount of disfavor by putting his mother in the St. Peter Asylum. He continued to practice in Carver County for a number of years. He probably was not a graduate of a medical school, inasmuch as he practiced under the exemption law of 1883.

Edward E. Novak was born at Danforth, Johnson County, Iowa, on April 29, 1873. He was educated in the rural schools of Johnson County and attended the Iowa City Academy from 1888 to 1892. He was graduated from the Medical Department of the State University of Iowa in 1895.

After his graduation he located in New Prague where he has continued in practice to the present time, with the exception of two six-month leaves (1912 and 1932) when he visited European clinics. He is a member of the Scott-Carver County Medical Society and the Minnesota State and American Medical Associations.

Always interested in rural education problems, he has served on the New Prague School Board for over thirty years. He was president of the Minnesota State School Board Association from 1937 to 1938 and he is now a member of the Board of Regents of the University of Minnesota. In recent years he has served as Minnesota state senator from his district.

Gottlieb Oppliger settled in Waconia in 1899. Before 1909 he was in Baudette, Minnesota.

George H. Overholt, a graduate of the Albany Medical College, New York, in 1866, located at Shakopee, Scott County, in January, 1871. His card announced him as "Physician, Surgeon, and Obstetrician." After practicing at

Shakopee for two years or more, he moved to St. James, where he lived for many years and operated a drug store. He was licensed to practice in Minnesota in 1887.

E. J. Palmer, a graduate of the University of Pennsylvania, came to Chaska in 1869 and at that time said that he had spent thirty-one years in the practice of his profession. He remained only a year, returning then to his old home in Georgia.

John S. Pashley located in Belle Plaine, Scott County, about 1866. He practiced there until his death in 1876.

W. H. Phillips was a graduate in medicine from the University of Minnesota in 1894. He came to Jordan to practice about 1896 and remained in the county many years. He served as county physician in 1897.

William Ray was a graduate of the Missouri Medical College in 1868, who came from St. Louis to Chaska in that year and remained in practice there about five months. For a short time he practiced in Saint Paul, and in September, 1868, he moved to Glasgow, Missouri, a larger field for practice.

H. W. Reiter was graduated from the Medical Department of the University of Minnesota in 1893. Practicing first in Kerkhoven, Swift County, he settled in Shakopee in 1897 and soon had a good practice. He was very often summoned to attend accident cases. In 1898 he was appointed official surgeon of the Omaha Railway at Shakopee, a position which he has held for many years. On the departure of Dr. C. W. Malchow in 1900, Dr. Reiter purchased the former's practice, office equipment, horses and vehicles. He had a heavy practice which kept him busy, and he retained his prominent position. In 1910 he became United States pension examiner at Shakopee and served as secretary of the board. In 1914 he took office as coroner of Scott County; he served on the school board four terms. Dr. Reiter joined the Scott and Carver County Medical Society when it was first organized, and he held the secretaryship from 1904 to 1929.

Dr. Rueten was a practicing physician at Cologne in 1886.

J. S. Richardson (or J. L. Richardson) came to Chaska from Rockford, Wright County, in 1870. His professional card read:

> Dr. J. S. Richardson
> eclectic
> Physician and Surgeon
> Chaska Minn.
> Office opposite the Court House. Offers his services to the surrounding country and is prepared to treat thoroughly all chronic cases.' Especially liver and lung diseases.

He remained in Chaska for several years. Later he may have moved to Norwood, where a doctor was much needed. After 1883 he practiced under an exemption certificate. It appears that by 1890 he was in Perham, Otter Tail County.

C. W. Riches practiced medicine in Waconia in 1886 and later. In 1883, when he was living in Young America, he received an exemption certificate under the Minnesota "Diploma Law" of that year.

Frederic N. Ripley, the first physician in Scott County, arrived in Shakopee in the winter of 1852-1853 and in that season entered business and practiced medicine. Although he failed in trade, he continued practicing medicine there. Later in the year 1855 he moved to a townsite belonging to him near the source of the Crow River (now the town of Litchfield), where he camped all winter. When in March he attempted to come out for supplies, he lost his way and was frozen to death. At that time he was about twenty-eight years of age, and was county commissioner of the new county of Meeker. He had intended to make Cedar City his home and was one of the principal proprietors of that town. Dr. Ripley was a native of New York.

A. O. Risley came to Shakopee in 1855 and practiced there for ten years or more. He was a member of the North Western Pioneer Company and he made many trips around the territory procuring and surveying town sites. In 1857 he married Miss S. J. Coulthard of Shakopee. He was one of the few physicians in the vicinity at that time and consequently was kept busy day and night when any sickness came to the community.

Theobold Roehrig was a German physician who settled in Shakopee in 1868. The notice of his coming inserted in the paper announced that he was a graduate of the "highest Medical University of Germany," and that he brought with him the advantages of many years of successful practice. He remained three years or more.

Corydon Eugene Rogers was graduated from the medical department of the University of New York City in 1868. He opened an office in Carver in April, 1868, and soon had a good practice. For several years he was postmaster at Carver. In 1869 he married Miss Mary Pamelia of Troy, New York. In January, 1870, he was appointed first county physician of Carver County. He resigned the position in August of that year when he decided to move to Thompson, on the line of the Superior Railroad, in Carlton County. He was elected register of deeds for that county, but continued to practice medicine. Four years later he went to Minneapolis where he engaged in the insurance and real estate business. In Minneapolis on November 10, 1883, he received his license to practice medicine.

William Rottmann was graduated from the University of Zurich, Switzerland, in 1874; he came to Jordan, Scott County, from Arlington in September, 1883. His card read:

Dr. Wm. Rottmann
Physician & Surgeon
(Deutscher Arzt)
Graduated in Zurich, 1874
Jordan, Minn.

He received his license to practice medicine in Minnesota on March 3, 1884. After a year or two he moved to Young America and then returned to Jordan about 1888. In May, 1889, he again changed his place of residence

and moved to Minneapolis. He was considered a skillful physician. In September, 1889, he died at Minneapolis.

Dr. Rouse settled in Shakopee about 1858. He practiced medicine there for ten years or more. In 1867 he took in Dr. Morrow as a partner.

B. Rudorf was a practicing physician in Young America in 1875.

Jacob Ryder settled in Cologne, Carver County, about 1884. He was interested in real estate and for that reason he moved to Saint Paul in 1887. In 1890 he lived in Albany, Stearns County, and late in that year he returned to Cologne. He was considered an able physician. After 1883 he practiced under Exemption Certificate No. 417-3.

Alfred A. Sabin established himself in Shakopee in 1883. He and his wife were active in social affairs and he had a good practice. He started the manufacture of a patent medicine and in 1885 the demand for it had reached large proportions. In 1886 he moved to Le Sueur, where he remained until 1892, returning at that time to Shakopee to take Dr. J. B. Dunn's place. In 1894 he was appointed city health officer, and the next year he was elected to the pension examining board at Shakopee. He had a wide acquaintance in both Carver and Scott Counties and practiced in both. He died at Shakopee after a seige of muscular rheumatism in February, 1896, at the age of forty years. He was a native of Indiana and had spent his boyhood in Michigan, moving to Minnesota in 1879. He received his medical education at the University of Minnesota, from which he was graduated in 1892.

Mrs. Catherine Salden was a practicing physician who claimed to have been licensed by the United States Government. She spent a brief time in Chaska in 1870.

Dr. Salisbury was the first physician in the township of St. Lawrence, Scott County. He came there in 1859 and remained but a short time. A schoolhouse was built in 1859 and Dr. Salisbury taught the first school held there.

M. Schober came to Chaska from La Crosse in February, 1899. He had been a member of a medical society in Wisconsin. His professional card entered in the *Valley Herald* read as follows:

Dr. M. Schober
of the University of Berlin
Physician and Surgeon
Special attention given to all surgical
diseases and diseases of the eye.
Office Starken Building

He was a skillful and popular surgeon who endeavored to interest the citizens of Chaska in a project he had for the equipping of a first-class hospital in the city. In June, 1900, he had succeeded in securing the co-operation of the Franciscan Brotherhood of Chaska and the surrounding stations, and was awaiting the sanction of Archbishop Ireland for the venture. There was no hospital in either Scott or Carver County at that time.

Edward A. Shannon was graduated from the Saint Paul Medical College in 1886. In 1888 he established his residence at Watertown, Carver County, where he served as coroner in 1891 and 1892. He moved away from the county in 1892, later locating at Buffalo, Wright County.

Peter F. Shillock was born in New Ulm, Minnesota, in 1858. He was graduated from the medical department of the University of New York City in 1882, ranking second in a class of two hundred. When he received his Minnesota license on November 23, 1883, he was living in Hastings. Later he began practicing in Chaska and became well known through Carver County. After three or more years of practice there, he moved to Horicon, Wisconsin. Later he returned to Hastings. He died in Hastings of apoplexy in November, 1888, at the age of thirty.

E. E. Shrader (or Shroeder), who was graduated from Jefferson Medical College in 1893, located at Watertown, Carver County, about 1895. He soon had a very good practice there which drew from the towns of that vicinity.

J. D. Simpson, a graduate of the Medical College of Chicago in 1881, came to Shakopee early in that year. In May of the same year he moved to Henderson, Nicollet County. Soon after that he married Miss Sarah Lord of Shakopee. Dr. Simpson spent the year 1893 in New York and the following year in study in the hospitals of England where he specialized in diseases of the eye. In July, 1894, he settled in Minneapolis, where he practiced for a number of years, although he continued to keep up his contacts with the people of Shakopee.

Herbert O. Smith was a homeopathic physician who was graduated from Hahnemann Medical College, Chicago, in 1881. Before coming to Shakopee in June, 1881, he spent some time as a student of Dr. John A. Steel of Minneapolis. His card read:

H. O. Smith, M.D.
Physician & Surgeon
Shakopee, Minnesota
All cases of Surgery or General Practice in town or country attended promptly. Office over McMullen's store. Residence 1st door east of Occidental hotel.

Office hours 10 to 12 a.m.
2 to 4 p.m.
7 to 8 p.m.

He soon became one of the best known and busiest doctors in the county. He had a famous team of horses which brought him to each call in the minimum of time. Evidently he prospered; his home was spoken of as one of the most imposing in town and it was constantly being improved. He took frequent trips to Minneapolis and Saint Paul and had many house guests. Dr. and Mrs. Smith were very active in organizational work. The doctor was interested in the Shakopee Equitable Aid Union and held many offices in that society; he also held offices in the E.A.U., in the King Solomon Lodge No. 44, A. F. & A. M., in the A.O.U.W., in the Children's Home Society, the St. John's chapter of the Royal Arch Masons, and the Masonic Auxiliary in Shakopee. For several years he served as city health officer in Shakopee, also as county physician, and was for many years a member of the pension

examining board. He also took an active interest in the schools and in the building of the new Presbyterian church in 1900.

John Elfred Soper, who was graduated from the University of Minnesota Medical School in 1894, came to Norwood, Carver County, in January, 1899, after the death of Dr. Koch of Norwood. He had previously practiced at Delano.

Dr. Southworth came to Belle Plaine in the middle fifties. In 1861 he was elected a director of the Scott County Agricultural Society.

Hugo Speier, who had been educated in medicine in Berlin, Germany, settled in Belle Plaine about 1883 and married there. He was licensed to **practice medicine** in Minnesota on December 31, 1883, and was graduated from the College of Medicine of the University of Minnesota in May, 1884. In July, 1884, he settled in Jordan, where he shared offices with Dr. Walter. His professional card read:

Dr. H. Speier
Physician & Surgeon
(Deutscher Arzt)
Office with Dr. Walter
Residence in F. Nicolin's building, at south
end of stone bridge.
Jordan, Minn.

Beginning in February, 1901, Dr. Speier was in Rochester, Minnesota, about ten years. He came to Rochester from Janesville, Wisconsin, with a record of having practiced medicine in Duluth some fourteen years and in Janesville four years.

C. S. Stoddard started the practice of his profession at Shakopee in 1874. During his stay of five years in Shakopee he held offices in the Lodge of Good Templars at Shakopee, and in the Grand Army of the Republic of Minnesota. In 1875 he was appointed United States examining surgeon for pensioners of Scott County. In 1879 he moved to California where he practiced for many years. In 1900, while in Santa Barbara, California, he wrote a series of articles called "Looking Backward" which told of his experiences in Shakopee during the seventies. These were published in the *Scott County Argus* in that year.

W. Strickland came from Shell Rock, Iowa, to Jordan, Scott County, in July, 1879. He decided not to stay and left in search of a new location in August of that year.

F. H. Stuart opened an office in Shakopee for the practice of medicine and surgery in October, 1879. He worked up a fine practice, then suddenly left. He next settled at Ada, Kittson County, where he became notorious, first leaving under a cloud, then returning, only to disgrace himself by killing another physician in a fight in 1885.

L. S. Thompson located in Shakopee in March, 1874. In his card he referred by request to Drs. Murphy, Hagan, Richeson and Stone of Saint Paul. He arrived soon after Dr. Stoddard and proved an energetic rival. In April he was selected by the pension department to fill the vacancy made by the death of Dr. Wakefield as United States examining surgeon for Scott County.

After remaining about one year in Shakopee, he moved to Honolulu where he engaged in raising sugar cane.

E. L. Thorp, "physician, surgeon, and accoucheur," located at Jordan in March, 1879, but departed in a few months to practice medicine at Shell Rock., Iowa.

C. F. Tuomy, who received his degree of doctor of medicine from the University of Michigan in 1896, arrived in Chaska in January, 1897, and soon came to the front as a successful practitioner. In April, 1898, he was elected to serve for three years on the Chaska board of health. In September of that year he was elected to fill the position of assistant physician at the state hospital at St. Peter.

Dirk Van Krevelin came from Hokah, Houston County, to Belle Plaine in 1879. He announced that he had had a large experience in the tropics and malarial districts, on shipboard, and in marine and naval hospitals. In 1880 he served as coroner of Scott County. He was considered both honest and genial and he had a good following. In 1888 he bought the store of R. Zeglin, a well known merchant at Hollywood, a town near New Germany, Carver County. It was a general merchandise store, and the doctor added a hardware store to it. The next year he sold out at cost, having decided to give up the merchandising business. He then settled at Waconia, where he practiced medicine until 1897 when he moved with his family to Silver Lake, McLeod County.*

Dr. Van Pol practiced near Benton, Carver County, about 1886. He died in 1888 and was buried from the Catholic church at Cologne.

A. Wagner was graduated from the University of Berlin (University of King Frederick Wilhelm) in 1873. He was a specialist in diseases of women. In June, 1887, he came from Joliet, Illinois, where he was physician for St. Joseph Hospital, to locate at Waconia. He was successful there and in the nearby towns. In November of that year he moved to Chaska. Three months later, he moved to Saint Paul where he was associated with Dr. A. J. Stone in the Saint Paul Medical College.

John L. Wakefield was born in Winsted, Connecticut, in 1823. He was graduated at Yale College in 1847 and commenced the practice of medicine under the direction of his father at Winsted. He came to Shakopee in the spring of 1854, and practiced there until his death in 1874, at the age of fifty-one years.

In 1862, at the time of the Indian outbreak, Dr. Wakefield was physician to the Yellow Medicine Indian Agency. The doctor escaped, but members of his family were captured by the Indians and held for six weeks until recaptured by the troops. Dr. Wakefield became postmaster in Shakopee in 1869. At the time of his death he had a very extensive practice and was one of the prominent citizens of that vicinity.

A. B. Walter was among those who made claims in 1854 in Belle Plaine, although he did not reside in that village or practice medicine there until 1860. After five or six years in Belle Plaine, he sold his claim and moved to Jordan, also in Scott County.

Dr. Walter was one of the best and most popular physicians in the county.

*See Notes on History of Medicine in Houston County.

About 1879 he and Dr. F. W. Cram formed a co-partnership, and the two physicians paid daily visits to Belle Plaine, and attended many patients in the country as well. In 1881 Dr. Cram departed, and Dr. Walter continued to practice in Jordan until 1887, when he moved to Minneapolis. In the winter of 1888-1889, Dr. and Mrs. Walter lived in Shakopee with their daughter, Mrs. Southworth. The Scott County Medical Society was formed about that time (1887) and Dr. Walter became a member. He next moved to Princeton, Minnesota, where he remained until 1897. At that time he and Mrs. Walter moved to Sheldon, Iowa, to live with their son-in-law, Dr. F. W. Cram and his two children. Dr. Walter died there at the age of eighty years in 1898.

Josiah S. Weiser, of German descent, was a native of Berks county, Pennsylvania. He came with his parents and two brothers to Minnesota in 1853. His father died from cholera on the Mississippi River boat on which they finished the journey, and was buried at Saint Paul.

Dr. Weiser settled in Shakopee about June, 1855, and his professional card appeared in the first issue of the *Shakopee Independent.* In April, 1856, he entered into a co-partnership with Dr. C. L. Davenport. This was dissolved by mutual consent a few months later. In 1859, when Dr. Weiser became the partner of David L. How, druggist and chemist, he continued to attend to the practice of medicine and surgery. He was interested in public affairs and often took part in debates and discussions. Dr. Weiser was well liked and respected by the settlers in Shakopee; in 1858 he was elected mayor of the city.

In 1862 when he received appointment as Surgeon to the First Regiment of Mounted Rangers under Colonel McPhail, the women of Shakopee made him a present of a sword and a belt. It was in the outbreak of the Sioux during the next year that he met his death at the age of thirty years. An account of his heroism may be found in the records of the Sioux outbreak. Suffice it to say he is ranked among the heroes of pioneer days who were members of the medical profession. Ten miles north of Tappan, Minnesota, there is today a gray granite marker bearing the legend:

Sibley Trail
Dr. J. S. Weiser Shot Here
By Indians
July 24, 1863

K. B. Wilkinson was a physician and surgeon who located at Jordan in August, 1876. His stay was of short duration.

Phillip M. Williams was a physician and surgeon who located at Belle Plaine in March, 1858. The following quotation from the *Belle Plaine Enquirer* for May 13, 1858, is not too flowery to indicate the place Dr. Williams held in the community:

Our Citizens are sorry to learn that Doct. Williams leaves Belle Plaine for another field of professional practice. It was not indeed expected that a physician of his acquirement and thorough training could long be retained in a comparatively new region when there were so many larger and more congenial fields for the display of medical skill in the older cities of the country.

Dr. Williams had been in Belle Plaine less than one year and yet he had acquired a widely extended business and to our knowledge had also given the highest satisfaction.

Equally popular and respected in social as in professional life is Doct. Williams, for our friend is a gentleman as are all the Virginians in Belle Plaine.

President's Letter

THE BROOKINGS REPORT

One of the most significant books to be published recently—and one which will certainly come as "good news" to physicians—is a small volume entitled "The Issue of Compulsory Health Insurance." This book, an impartial and unemotional presentation of *facts,* not propaganda, is the work of a research agency famous for its work in the social sciences, the Brookings Institution of Washington, D. C.

Every physician will want to read this book, for its contents are indeed heartening—as well as enlightening. In fact, every thinking American should become familiar with it. It is a very unimposing volume, bound in a modest blue cover, but in its pages are some of the most cogent arguments in behalf of the voluntary system of providing for medical care yet to be advanced.

The evidence against compulsory health insurance is conclusive. In the opinion of the Brookings experts, it would be unwise to legislate, in place of the present system, a federalized medical care plan. Such a plan, they hold, would be distinctly detrimental to medical progress.

The Brookings report is the work of two of the Institution's senior staff members, Drs. Lewis Meriam and George W. Bachman, both of whom are familiar with government service, medical research and public health. They have examined all of the literature in the field and have carefully evaluated all of the evidence; the result proves definitely that traditional American methods are superior to foreign ideologies.

All things considered—American death rate, life expectancy, medical costs, capacity to pay, and all the rest of the factors that must be fitted into the American health picture—the Brookings report concludes that the present system is basically sound. Certain arguments often used in support of compulsory measures are effectively refuted, for example, the "draft statistics." It is shown that the so-called draft statistics are unreliable as a measure of the health of this nation and cannot be used to show medical needs.

Another striking point made by the Brookings report is one which physicians have argued for some time: that people won't be any more able to pay a health tax than they are able to budget for medical bills on a voluntary basis. It is also pointed out that there aren't enough facilities, trained workers and qualified professionals to carry out a compulsory health program should one be instituted.

The Brookings report has been made upon request of Senator H. Alexander Smith, chairman of the subcommittee on health of the Senate Committee on Labor and Public Welfare, which is charged with the duty of evaluating proposed federal health legislation. Senator Smith asked specifically that the Brookings Institution evaluate the relative merits of two bills which have been pending before the Eightieth Congress, S. 1320 (paralleling the Wagner-Murray-Dingell Bills) and S. 545, the Taft-Smith-Ball-Donnell Bill.

The proposal labelled S. 1320, which is in essence a bill to create an over-all federal health plan, is not recommended by the Brookings report. The report favors, rather, the other measure, which would provide federal grants-in-aid to states so that each individual state could develop its own plan adapted to fit local needs.

The fact that the Brookings Institution is recognized as a thoroughly independent organization only serves to increase the indebtedness of the medical profession to it for the excellence of this objective piece of work. It should spur the effort of physicians everywhere to fight even more vigorously for what we *believe* is right and what has been *proved* to be the better course.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

THE STATE MEDICAL MEETING, 1948

THE ninety-fifth annual meeting of the Minnesota State Medical Association which was held in Minneapolis, June 6-9, was the largest in registration in history. Some 1,989 physicians, 768 nurses, 525 exhibitors, 349 Woman's Auxiliary members, and 609 guests attended. The 1949 meeting will be held in Saint Paul.

The following officers for 1949 were elected:

President-elect: Ernest M. Hammes, M.D., Saint Paul (takes office as president, January 1, 1949)
First Vice President: C. E. Proshek, M.D., Minneapolis
Second Vice President: A. E. Sohmer, M.D., Manakto
Secretary: B. B. Souster, M.D., Saint Paul (re-elected)
Treasurer: W. H. Condit, M.D., Minneapolis (re-elected)
Speaker of the House of Delegates: Charles G. Sheppard, M.D., Hutchinson (re-elected)
Vice Speaker of House: Haddon M. Carryer, M.D., Rochester (re-elected)
Councilors:
Fifth District: Justus Ohage, M.D., Saint Paul (to replace Dr. E. M. Hammes)
Fourth District: H. J. Nilson, North Mankato (succeeding Dr. Sohmer)
Sixth District: O. J. Campbell, M.D., Minneapolis (re-elected)
Eighth District: W. L. Burnap, M.D., Fergus Falls (re-elected)

Delegates to the American Medical Association:
J. A. Bargen, M.D., Rochester (succeeding Dr. A. W. Adson)
W. A. Coventry, M.D., Duluth (re-elected)

Alternate delegate to the American Medical Association:
J. C. Hultkrans, M.D., Minneapolis (re-elected)
W. L. Burnap, M.D., Fergus Falls (re-elected)

On Sunday afternoon, Dr. Ludwig L. Sogge of Windom received a special citation presented by the Council of the Association for services to his colleagues and the people of the state.

Dr. Alfred W. Adson of Rochester presented the citation which read in part:

> . . . we all commend you for your extraordinary service . . . your high ideals, your understanding of human nature, your honest, frugality, loyalty and patience. . . . It is known that you at personal sacrifice have given much of your time during the past twenty-three years in directing the activities of the committee on public policy and entitle you to some relief of that responsibility and to the honorable position of counselor to that committee.

Dr. A. J. Chesley, Secretary and Executive Officer of the Minnesota State Department of Health, was honored for his nearly fifty years of outstanding service in public health work in the United States (and abroad) by being selected as the recipient of the 1948 Distinguished Service Award of the MSMA. Presentation of the medal, a complete surprise to Dr. Chesley, took place at the annual banquet on Tuesday night.

Dr. Leonard S. Arling, of Minneapolis, received the annual medal for the best scientific exhibit by an individual physician presented by the Southern Minnesota Medical Association for his exhibit "What Is Industrial Medicine" Judges who made the selection were: Ernest M. Hammes, Saint Paul; Harold L. Gainey, Kansas City, Kansas; and Sanford S. Sisson, Jacksonville, Florida.

Four members from the list of thirteen eligible to receive certificates citing them for having completed fifty years of practice which entitles them to membership in the Fifty Club were present at the banquet. They were: Dr. Gerhard A. Dahle, Mankato; Dr. Alex E. Hedback and John R. Petersen, Minneapolis; and Dr. William F. C. Heise, Winona. Those unable to attend the banquent were: Drs. Aloysius S. Fleming, Carl J. Lind and N. H. Sheldrup, Minneapolis; Drs. Frank E. Burch, James S. Gilfillan and Asa M. Johnson, Saint Paul; Dr. Leon A. Williams, Slayton; Dr. Joseph G. Parsons, Crookston; and Dr. William B. Torgerson, Oklee.

The Council made the following statement in regard to rebates:

> The Council hereby declares itself as unalterably opposed to all forms of rebates and declares the acceptance

of such as an unethical practice and grounds for disciplinary action by the county societies.

It is recommended that any practice which might give rise to public suspicion that a business arrangement exists between a commercial house and a physician be discontinued.

The Council assures the House of Delegates that it is fully aware of the serious damage to our public relations which has occurred due to the publicity given the government action against the members of our Association.

The Council is alerted and will inform the county societies when it is timely to implement the above suggested action.

Among the numerous matters acted upon by the House of Delegates at the meeting, the following deserve special mention:

Approval of a special assessment of $10.00 on each member starting January 1, 1949, to implement the present public relations program of the State Association.

Reaffirmation of its support of enabling legislation for establishment of county and multiple County Public Health Units and instruction of the Committee on Public Policy to actively support such legislation next year.

After hearing considerable discussion, during which the opposition to the resolution approved by the House last year for having the laboratory of the State Department of Health carry on Rh typing service for physicians of the State was led by members of the Minnesota Society of Clinical Pathologists, the House of Delegates approved a resolution to rescind its former action. Assurance was given by the pathologists that they are adequately staffed and equipped to handle all work of this nature.

The annual report of the Committee on Medical Service recommending an upward revision of the present allowance for medical services to recipients of government aid was approved. These provided for a general over-all increase of 25 per cent after certain items, against which most complaints have been heard have first been raised. The Committee had met with the Minnesota Division of Social Welfare and discussed this whole matter in May, and will now ask that agency to permit these new allowances to become effective July 1, 1948.

The resolution in regard to vaccination with BCG submitted by the Committee on Medical Education and adopted by the House of Delegates seems worth reporting in full:

RESOLUTION

WHEREAS it is a well-known clinical fact that tuberculosis is a disease against which the human body frequently cannot develop strong, dependable, and permanent immunity, and

WHEREAS the use of BCG vaccine is authoritatively reported to provide a relative immunity of varying degree and duration, and

WHEREAS the American Trudeau Society after extensive consideration has said "BCG vaccine, prepared under ideal conditions and administered to tuberculin-negative persons by approved techniques, can be considered harmless

BE IT THEREFORE RESOLVED that the House of Delegates of the Minnesota State Medical Association approve the use of BCG vaccine in the state of Minnesota,

1. Provided that its use be limited to those persons with negative-tuberculin skin-test reactions who may be exposed to unusual hazards of tuberculous infection greater than the danger experienced by the general population, and

2. Provided that vaccination be carried out under conditions which permit prolonged observation of all vaccinated persons, and

3. Provided that the vaccine employed be obtained from the laboratories approved by the United States Public Health Service or the Minnesota State Board of Health, and

4. Provided that all instances of persons vaccinated with BCG vaccine shall be reported to the Minnesota State Board of Health, and

5. Provided that recognition be given to the fact that the use of BCG vaccine is not a substitute for accepted methods of tuberculosis prevention and control, and should not lead to a relaxation of such precautions.

HADDON M. CARRYER, M.D.
Chairman

The Cancer Committee of the Association submitted an outline of a project to be known as "The Cancer Education Service" of the Cancer Committee of the MSMA. (See June issue, page 674).

In considering this project as outlined by Dr. Wells, Chairman of the Cancer Committee, the Council approved the project subject to the declared principles that clinical material shall be used solely for educational purposes and not for the purpose of obtaining free consultation services, and recommended that the use of cancer teams should be arranged through officials of component medical societies only and that the project shall be termed a Cancer Education Service of the Cancer Committee instead of a Cancer Consultant Service as originally proposed.

BLUE SHIELD REPORT FORMS

AT THE present time Minnesota Blue Shield has many Medical Service Report forms in the hands of physicians throughout the state for listing of the services they have rendered Blue Shield subscribers. The majority of these forms will be returned to the Blue Shield office prompt-

ly; others, however, will be tardy and still others will never be returned. Those that are tardy or are never returned are those about which we are concerned. Those which are not returned cause trouble for the office personnel, the Blue Shield subscriber, and also for the attending physician.

First, the Blue Shield office must carry a reserve for unreported and unpaid claims. The delinquent cases increase the accounting procedure and also require extra checking, in that duplicate Medical Service Reports must be sent out each month in the event the original has been lost, misplaced, or overlooked by the physician. This additional procedure requires additional personnel.

Second, the subscriber will write or call the Blue Shield office to inquire as to when his case is to be paid. It is embarrassing to tell him that the report has not been returned from the physician's office, for in some cases the subscriber has received a statement from the attending physician on which no credit is shown for Blue Shield payment. This makes the subscriber wonder whether this organization is slow or whether it is going to make any payment on his claim. At the present time there are cases pending, dating back to January and February, 1948, that are unpaid merely because the attending physician has not returned the completed Medical Service Report form.

Third, the physician is inconvenienced in that he does not receive his payment as promptly as he could. If the physician's statements are sent out without first returning the Blue Shield form, the subscriber frequently gets the impression that the physician is trying to "put something over" on him and collect from him as well as from Blue Shield. We know that this is *not* the case, but some subscribers are difficult to convince.

To sum up, physicians are urged to complete any forms they may have received from the Blue Shield office and return them as rapidly as possible, so that cases may be paid off in the shortest possible time. The first Minnesota Blue Shield claims were paid off on a monthly basis, but with that system some claims were held about two months before payment could be made. In April the procedure was changed to a weekly pay-off basis which made it possible for more cases to be paid before the physician's monthly statements are sent out. This method has proved very satisfactory in that both the physician and the subscriber are better satisfied with Blue Shield service. By paying weekly no completed claim is held in the office over ten days and the Blue Shield staff is justly proud of this, for there are few if any other plans in the country that can boast of such service.

Once again you are urged to return forms promptly and remember, too, that you also benefit in that the sooner the form is returned, the sooner you get paid.

METOPON AVAILABLE

PHYSICIANS who have had patients suffering from severe and persistent pain have realized the shortcomings of morphine and other opium derivatives for prolonged use because of side-effects, such as emesis, constipation, sedation, acquired tolerance, and addiction. The usual need for hypodermic administration is also an inconvenience.

The discovery by Small in 1936 of a substitution product of morphine methyldihydromorphinone, for which the official name of metopon hydrochloride has been adopted, and the determination of its pain-killing properties on oral administration led the Committee on Drug Addiction and Narcotics of the National Research Council to institute an investigation of its clinical possibilities. Physicians were permitted to obtain metopon directly for clinical trial on cancer patients suffering from pain. Conclusions have been drawn from the experience of over 2,000 physicians with over 4,000 patients and were published by the Council on Pharmacy and Chemistry in the May 22, 1948, issue of *The Journal of the AMA* (page 365).

The report indicates that metopon is a valuable pain killer, even on oral administration, and has little tendency to produce the undesirable side actions commonly experienced with morphine. While not by any means entirely effective in preventing withdrawal symptoms in morphine addicts, it is of some value as a substitute. Its most satisfactory results are obtained if used in the relief of pain before too much reliance has been put upon morphine.

Metopon can now be obtained on prescription at the pharmacies in 3 mg. capsules only. It is a narcotic and subject to the same regulations as other narcotics. Attention is drawn to the min-

(Continued on Page 811)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

MEDICAL GROUP SEEKS TO UNITE WORLD PHYSICIANS

Doctors of forty-six nations are now represented in an international organization designed to promote health throughout the world—the World Medical Association. Thus another step toward the realization of international understanding and peace through the provision of a means of jointly meeting some of the mutual problems faced the world over has been taken. This association, together with the newly formed World Health Organization, which is now virtually assured full U. S. support, is a bright spot in an otherwise sober international picture.

Created in Paris, September 18, 1947, the World Medical Association had been exactly one year in the making, with thirty-two national medical associations working together to draw up the plans. Prominently figuring in the promotional work is the American Medical Association. Dr. Louis H. Bauer, Hempstead, New York, is one of the ten administrative councilors elected by the delegates to the organization meeting; headquarters of the association will be in New York.

Closest possible liaison with the United Nations Educational, Scientific and Cultural Organization (UNESCO) and with the World Health Organization is to be maintained so as to keep the medical profession throughout the world in touch with these and other groups whose activities lie in medical and health fields.

Seven Basic Objectives

The primary objectives of the World Medical Association have been outlined as follows:

1. To promote closer ties among the national medical organizations and among the doctors of the world by personal contact and all other means available.

2. To maintain the honor and protect the interests of the medical profession.

3. To study and report on the professional problems which confront the medical profession in the different countries.

4. To organize an exchange of information on matters of interest to the medical profession.

5. To establish relations with, and to present the views of the medical profession to, the World Health Organization, UNESCO and other appropriate bodies.

6. To assist all peoples of the world to attain the highest possible level of health.

7. To promote world peace.

There is considerable evidence that these objectives will receive strong world support.

It is significant that Prague, Czechoslovakia, was selected for the 1948 meeting in view of its long medical history. Desirability of a European meeting place stems from the travel problem for delegates from Europe and their inability to afford a long trip. Prague physicians are hoping that an assembly of medical men from all over the world might stimulate a restoration of this former great teaching center.

To Maintain Local Committees

In addition to the general office and secretary in New York, it is planned that the World Medical Association shall have assistant secretaries in strategic areas of the world as well as local committees in each nation.

It is also planned to publish a journal of the activities of the association in three languages—English, French and Spanish. Financing of the association presents certain grave difficulties, it is noted. Some countries restrict their citizens' spending money too extensively outside of their own particular borders, while in other countries there is utter economic chaos. It is not expected that the association will be self-supporting very soon; it will undoubtedly have to rely on financial assistance from outside. Many organizations and individuals have pledged to contribute substantial

sums, which will enable the association to go ahead with present plans.

The Council of the World Medical Association is exploring the possibility of making arrangements whereby funds advanced to the association will not be taxed by the respective countries.

Participating Nations Listed

In addition to the United States, forty-five nations are participating in the World Medical Association: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Cuba, Czechoslovakia, Denmark, Egypt, Ecuador, France, Great Britain, Greece, Guatemala, Honduras, Hungary, India, Iraq, Ireland, Italy, Luxembourg, Mexico, Netherlands, Nicaragua, Norway, Palestine (both Arab and Jewish states), Panama, Peru, Poland, Portugal, Puerto Rico, San Salvador, Spain, Sweden, Switzerland, Turkey, Uruguay, and Venezuela.

Out of courtesy to the nation entertaining the organizational meeting of the World Medical Association, Professor E. Marquis, Director of the School of Medicine of Rennes, France, was elected first president. Dr. Thomas C. Routley, Canada, was chairman of the organizing committee. Dr. Charles Hill, secretary of the British Medical Association, was elected honorary secretary until such time as a permanent secretary is appointed; Dr. Otto Leuch, Switzerland, is honorary (temporary) treasurer.

One of the first resolutions to be passed by the new group is one which gives strong evidence of the humanitarian motives behind the new association. It is to be presented for acceptance by physicians throughout the world:

> My first duty, above all other duties written or unwritten, shall be to care to the best of my ability for any person who is entrusted to or entrusts himself to me, to respect his moral liberty, to resist any ill treatment that may be inflicted on him, and, in this connection, to refuse my consent to any authority that requires me to ill-treat him.
>
> Whether my patient be my friend or my enemy, even in time of war or in internal disturbances, and whatever may be his opinions, his race, his party, his social class, his country, or his religion, my treatment and my respect for his human dignity shall be unaffected by such factors.

PUBLIC HEALTH DISCUSSED AT 95TH ANNUAL MEETING

A prominent feature of the ninety-fifth annual meeting of the Minnesota State Medical Association, held in Minneapolis last month, was an afternoon session devoted to a discussion of public health problems.

Health was viewed as a continuing job, which, as our standards continue to advance, will always remain unfinished. A panel of distinguished speakers, each of whom was qualified by wide experience in his particular field, presented the viewpoint that health is not merely the physical condition of an individual; it embraces, rather, a number of important factors — employment, wages, education, housing, standards of living, physical facilities—and a host of other considerations.

Speakers included Dr. John O. Christianson, superintendent of the University of Minnesota School of Agriculture; Dr. Lloyd E. Harris of the Section on Pediatrics of the Mayo Clinic and the Rochester Child Health Institute; Dr. Robert L. Novy, Detroit, president of Michigan Medical Service; and Dr. Morris Fishbein, Chicago, editor of the *Journal of the American Medical Association*. Senator Ball was to have appeared, but because of the press of legislative duties, he had to cancel out. His prepared talk was read by Dr. Reuben F. Erickson, Minneapolis, chairman of our State Committee on Public Policy.

Meeting Well Attended

Approximately 500 persons attended the public health meeting, to which allied professionals as well as the public at large were invited.

Dr. Christianson told of the part which the leaders of farm and rural groups must play in promoting health and urged that the medical profession continue its efforts to extend health education. Dr. Novy outlined the need for the spread of voluntary health insurance as a method of budgeting for medical and hospital expenses.

Bringing a healthy child into the world and keeping him healthy in mind and body was described by Dr. Harris as the real "first line of defense" in this country. He pointed out that every child should have the best possible start in life, which includes adequate prenatal and childbirth care for every mother; proper attention throughout infancy—scientific nutrition, immunization

against preventable disease and proper mental environment—as well as watchful guidance throughout childhood. These aims, he pointed out, are among several included in the over-all health program of the American Medical Association, which the medical profession stands ready to carry out with the help of an intelligent public.

Federal Program Unlikely

Senator Ball's message revealed that compulsory health insurance does not stand a chance of being enacted by the Eightieth Congress. He said that "the whole trend in Congress in the past three years has been away from further experiments in socialization rather than toward them."

Mr. Ball outlined some of his own views as to the development of a "sound federal health program" including "a positive rather than a negative approach to health . . . co-ordination of veterans medical care and the public health service . . . expansion in research . . . federal aid for more adequate sewage disposal where needed . . . health education . . . and further assistance to states for medical care for indigents."

Senator Ball concluded that "the United States will achieve far greater and more rapid progress in the field of public health, as in others, if it sticks to the principles of freedom through which so much has already been achieved."

Teamwork in Health Cited

The "magnificent teamwork" of people in the health professions has enabled the United States to reach its present outstanding standard of health, Dr. Fishbein told the conference.

He paid tribute to the countless workers who have contributed to U. S. health—physicians, public health workers, social workers, hospital administrators, technicians, clinical pathologists, sanitary engineers, entomologists, nurses, dieticians, and medical record librarians. He cited particularly the work done in the field of tuberculosis as one of the conspicuous examples of what he termed "teamwork in the conservation of human resources."

The outstanding feature of American medicine today, Dr. Fishbein declared, is its continuation in the field of what is commonly called private enterprise. He then pointed to the importance of the general practitioner to the maintenance of our present system of medical care.

"The general practitioner is the functioning unit of American medicine," Dr. Fishbein said. "Upon him devolves the duty of being the first to detect disease and the first to give proper care for the vast majority of conditions for which people consult doctors."

Dr. Fishbein concluded that "in every phase of medical care in our nation today there is teamwork. It is a teamwork that has grown out of the needs of man, but principally out of the advancement of medical science and a recognition of the necessity for co-operation, co-ordination and integration for maximum achievement."

REGIONAL HEALTH DAY MEETINGS PLANNED

The State Medical Association, the Woman's Auxiliary and the Minnesota Department of Health have joined forces in planning a series of regional health day meetings this fall to include every section of Minnesota. Eight such meetings are to be scheduled in the following locations: Bemidji, Crookston, Duluth, Fergus Falls, Mankato, Rochester, St. Cloud and Willmar.

Sponsored by the local medical societies and their auxiliaries and the public health department personnel in each community, local citizen participation and interest will be actively sought in the round-table and general meeting discussions on timely health topics for which the profession will serve as consultants.

METOPON AVAILABLE

(Continued from Page 808)

imal initial dose of 6 mg. for patients who have not been taking other opium derivatives, if satisfactory analgesic effect is to be expected. Those who have had previous opiates will probably need 9 mg. or more initially. Effects are said to last from five to ten hours, and repeat doses and intervals depend on various factors, those who have had previous narcotic medication requiring larger and more frequent doses. In substituting metopon for other opiates, rapid reduction rather than abrupt discontinuance of the previous medication is advisable.

In Memoriam

JOHN C. M. BRUST

Dr. John C. M. Brust, who was a fellow of the Mayo Foundation in 1932 and received an M.S. in proctology from the University of Minnesota in 1934, died May 14, 1948, in Syracuse, New York.

WILLIAM CHARLES EHMKE

Dr. William C. Ehmke of Willow River, Minnesota, passed away at his home on May 9, 1948, following a heart attack.

Dr. Ehmke was born January 20, 1881, in Le Sueur County, Minnesota. He attended Le Sueur High School and obtained his M.D. degree at the Minneapolis College of Physicians and Surgeons in 1905. In 1906, he went to Willow River as the company doctor for the Atwood Lumber Company. He practiced there until his death. He was a member of the East Central Medical Society, the Minnesota State and American Medical Associations.

On the occasion of his sixty-fifth birthday, January 20, 1946, the people of Willow River celebrated in his honor the completion of forty years of distinguished service to the community. During that time he had been very active in civic affairs. He was mayor for over twenty years and a member of the school board for over thirty years, acting most of the time as president of the board.

On November 28, 1907, Dr. Ehmke married Pearl Soliday. He is survived by his wife and three sons, William and Lyle of Willow River and Donald of Willmar; one brother and three sisters.

GEORGE B. HAMLIN

Dr. George B. Hamlin of Minneapolis died at his home May 3, 1948. He was seventy-seven years of age.

Dr. Hamlin was born in Minnesota on February 10, 1871. He was a University of Minnesota Medical School graduate, having received his degree in 1896.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He had received the certificate of recognition for fifty years of medical practice from the Minnesota State Medical Association.

Dr. Hamlin is survived by his wife, two sons, Lehan and Maurice of Minneapolis, and a brother, Ernest T. Hamlin of Santa Barbara, California.

SERGEANT P. MARTIN

Dr. Sergeant P. Martin, a fellow in surgery at the Mayo Foundation from 1913 to 1917, died January 8, 1948, in Kenmore, New York, at the age of sixty-one. Dr. Martin practiced urology in Buffalo, New York, after leaving the Mayo Clinic.

JOHN C. SERKLAND

Dr. John C. Serkland, a practitioner at Rothsay, Minnesota, since 1900, died on May 9, 1948, at the age of seventy-six.

Dr. Serkland was born February 23, 1872, at St. James, Minnesota. After receiving his M.D. degree at the University of Minnesota in 1900, and after a short period of practice in Minneapolis, he located at Rothsay.

In June, 1904, Dr. Serkland and Berthe Seline Pedersen of Rothsay were united in marriage. Mrs. Serkland passed away in 1912. They were blessed with three children, Alice, Alvin and Chester, who are all living. In 1920, Dr. Serkland married Anna Langeland, who survives him.

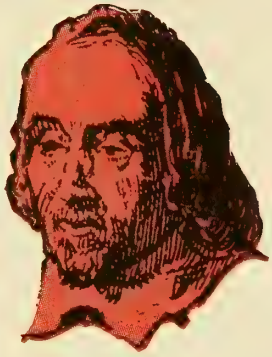
Dr. Serkland was a member of the Park Region District and County Medical Society, the Minnesota State and American Medical Associations. Besides giving devoted medical care to his locality, he was much interested in civic affairs, serving two terms as mayor of the village, was a member of the council and school board, and was a trustee of the Hamer Lutheran church. He held membership in the Sons of Norway, the Lutheran Brotherhood and the IOOF. According to the *Rothsay Argus,* "Dr. Serkland's complete honesty and sincerity carried him the friendship and respect of his community and of a wide circle of acquaintances in this area. The memory of their family doctor will long remain with the people on the farms and in the village of Rothsay."

GEORGE ELMER STROUT

Dr. G. Elmer Strout of Minneapolis died at his home, May 10, 1948, at the age of seventy-four.

Dr. Strout was born in Fargo, North Dakota, December 23, 1873. He graduated from the University of Minnesota Medical School in 1901, where he was a member of Phi Delta Theta and Nu Sigma Nu fraternities. He had practiced ophthalmology and otolaryngology in Minneapolis since 1917 and had been an associate professor at the University of Minnesota Medical School for some ten years. He was also associated with the Nicollet Clinic. A member of the Hennepin County Medical Society, he was also a member of the Minnesota State and American Medical Associations. Dr. Strout was also a director of the Wells Memorial house, a Mason, and a member of the Zuhrah Temple of the Shrine and the Minneapolis Club of St. Mark's Cathedral.

Dr. Strout is survived by his widow and a daughter, Mrs. Jack B. Hall of Minneapolis, and four brothers.



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Of General Interest

Among members recently re-elected to the executive board of the Minneapolis Health Action Committee were Dr. E. J. Hunekens and Dr. Charles E. Merkert, while Dr. Clare Gates was elected secretary of the group.

* * *

"Lesions of the Optic Chiasm" was the title of a paper presented by Dr. Charles W. Rucker, Rochester, at a meeting of the Chicago Ophthalmological Society in Chicago late in May.

* * *

Dr. James A. Mason, who practiced medicine in International Falls before entering the army in 1940, recently established a practice in Portland, Oregon. He is confining his practice to the field of orthopedics.

* * *

Dr. Isadore Fisher, a former Ceylon physician, received an M.S. degree in dermatology and syphilology from the University of Minnesota at the June commencement exercises.

* * *

"What's New in the Treatment of Rheumatic Diseases" was the title of a paper presented by Dr. Charles H. Slocumb, Rochester, at a meeting of the American Academy of General Practice in St. Louis, Missouri, late in May.

Dr. A. H. Field of Farmington was confined to St. Joseph's Hospital in Saint Paul for a week during May while being treated for an allergic reaction to penicillin. He returned to his Farmington practice on May 13.

* * *

Appointment of Dr. L. N. Dale, Red Lake Falls, as coroner of Red Lake County, was announced on May 20 by the county board of commissioners. Dr. Dale's term of office will expire December 31, 1950.

* * *

A Lake Park physician, Dr. R. Hendrickson, was named a member of a Citizens' Health Committee appointed on May 27 by Governor Luther Youngdahl to formulate plans for caring for the state's mentally ill.

* * *

"X-Ray Therapy" was the subject of an address by Dr. J. R. McNutt, Duluth, at a meeting of the Arrowhead Society of X-Ray Technicians on May 26 in St. Mary's Hospital in Duluth.

* * *

Among speakers at the twentieth annual meeting of the American Society of X-Ray Technicians, held in Minneapolis during the first week of June, was Dr. John D. Camp, Rochester, who described a grid-front cassette

(Continued on Page 816)

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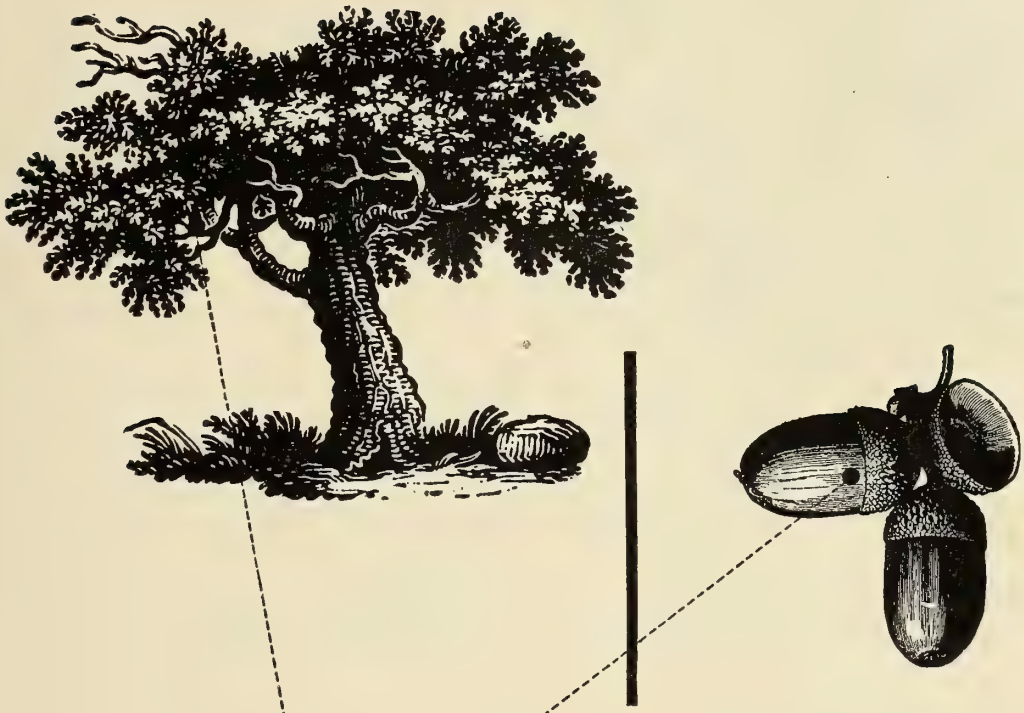
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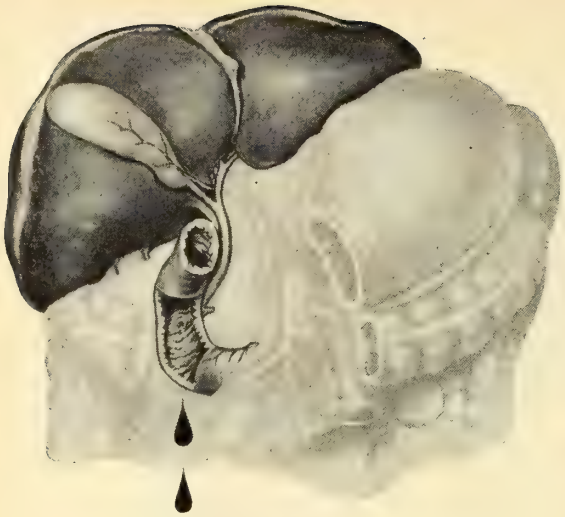
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*Albrecht, F. K.: Modern Management in Clinical Medicine, Baltimore, The Williams and Wilkins Co., 1946, p. 170.

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(Continued from Page 814)

which he had developed. Approximately 600 delegates to the convention from all parts of the United States, Canada and Hawaii attended the meeting.

* * *

Due to incorrect information, it was announced in the June issue that Dr. H. Robert Ransom was leaving Osseo to establish practice in Crosby. Word has come from Dr. Ransom that he is remaining in Osseo, where he is associated in practice with Dr. T. J. Bloedel.

* * *

The Jaracki Memorial Lecture was delivered by Dr. Virgil S. Counseller, Rochester, at Jewish Hospital in Philadelphia on May 22. The title of Dr. Counseller's lecture was "A Clinical and Surgical Review of Vesicovaginal Fistula."

* * *

Construction work began early in June on a 35-foot addition to Dr. Robert A. Glabe's office building in Plainview. To be part of the new addition are rooms for diagnostic equipment and records, a darkroom, a minor surgery room and a recovery room.

* * *

During June, Dr. Walter S. Neff of Virginia attended a postgraduate course in "Physiological Basis for Internal Medicine," which was presented by the American College of Physicians at the University of Illinois College of Medicine.

* * *

An M.S. degree in physiology was awarded to Dr. John W. Braasch, Rochester, on June 18 at the commencement exercises of the University of Illinois Chicago Professional College. Dr. Braasch is the son of Dr. and Mrs. W. F. Braasch of Rochester.

* * *

After a year in association with Dr. A. D. Hoidale and Dr. W. G. Workman in Tracy, Dr. O. J. Esser closed his practice early in June and returned to his previous residence in New Ulm. He planned an extended vacation before resuming his professional work.

* * *

"Child Care" was the title of a talk given by Dr. F. H. Walter of International Falls at a meeting of the Women of Moose Chapter in International Falls on May 26. Dr. Walter is affiliated with the International Falls Clinic.

* * *

Dr. Anthony Rosyzki, formerly of Blackduck, was recently discharged from the army after being stationed for a year at Honolulu. Dr. Rosyzki, visiting in Bemidji in June, planned to locate some place in Minnesota to begin his practice.

* * *

During June, Dr. Chester Thiem maintained the practice purchased in Gibbon by Dr. John Glaeser, thus providing Gibbon with a physician until Dr. Glaeser was discharged from the army. After July 1, Dr. Thiem began work at Ancker Hospital in Saint Paul.

* * *

Early in June, Dr. Albert E. Krieser announced the opening of offices for the practice of medicine and surgery in Mankato. His practice will be directed primarily to the diagnosis and treatment of diseases of the chest.

(Continued on Page 818)



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GYNECOLOGY—Intensive Course, two weeks, starting September 13, October 11.
Vaginal Approach to Pelvic Surgery, one week, starting September 27.

OBSTETRICS—Intensive Course, two weeks, starting September 27, October 25.

UROLOGY—Intensive Course, two weeks, starting September 27.

MEDICINE—Intensive Course, two weeks, starting October 11.
Personal Course in Gastroscopy, two weeks starting July 12, September 27.
Electrocardiography and Heart Disease, two weeks, starting August 2.
Electrocardiography and Heart Disease, four weeks, starting September 13.

DERMATOLOGY—Formal Course, two weeks, starting October 4.
Clinical Course every two weeks.

OPHTHALMOLOGY—Intensive Course, two weeks, starting September 20.
Refraction Methods, four weeks, starting October 11.
Ocular Fundus Diseases, one week, starting November 15.

OTOLARYNGOLOGY—Intensive Course, two weeks, starting October 18.

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(Continued from Page 816)

A graduate of the University of Loyola School of Medicine, Dr. Krieser practiced for a short time in Mankato before enlisting with the Mankato National Guard unit in 1941. After five years in the army medical corps, he was discharged and became a staff physician at the Ah Gwah Ching Sanatorium.

* * *

The role of psychosomatic medicine in literature was discussed by Dr. Frances J. Braceland, consulting psychiatrist at the Mayo Clinic, at a meeting of the Minnesota Assocation of Hospital and Medical Librarians on June 3 in Minneapolis.

* * *

Among speakers at the Sixth District meeting (part of the Wisconsin State Medical Society) in Green Bay, Wisconsin, on June 12 was Dr. H. E. Michelson, professor of dermatology at the University of Minnesota, who discussed "Dermatology for General Practitioners."

* * *

Two papers were presented by Dr. J. Arnold Bargen, Rochester, at a meeting of the New Mexico State Medical Society in Las Vegas, New Mexico, on June 3 and 4. Titles of the papers were "Management of Lesions of the Small Intestine" and "Management of Intestinal Obstruction."

* * *

It was announced on June 9 that Dr. Donald C. Balfour, director emeritus of the Mayo Foundation, had been elected a member of the Carleton College board of trustees at a meeting of the board on June 7. In 1934 Carleton College conferred upon Dr. Balfour the honorary degree of Doctor of Laws.

* * *

An "Outstanding Achievement" medal was presented by the University of Minnesota to Dr. William W. Will of Bertha at an alumni dinner on June 11 in Coffman Memorial Union. Dr. Will was recently named by the Minnesota State Medical Association for the AMA award for outstanding general practitioner.

* * *

A new physician in Excelsior is Dr. Elaine McKenzie, who recently became associated in practice with Dr. Lewis M. Reid of that city. A graduate of the University of Minnesota Medical School, Dr. McKenzie served her internship at Minneapolis General Hospital. She is married to Roy R. McKenzie, a chemical engineer.

* * *

Guest speaker at the annual dinner meeting of the Otter Tail County Public Health Nursing Service, held June 3 at Fergus Falls, was Dr. Hilbert Mark, director of the division of tuberculosis of the Minnesota Department of Health. Dr. Mark outlined the procedure for organizing the county for a mass chest x-ray survey.

* * *

Eleven Minnesota physicians were among the speakers at the forty-fourth annual meeting of the National Tuberculosis Association in New York during the middle of June.

In the group were Dr. H. Corwin Hinshaw, Rochester; Dr. William Roemmich, Hennepin County tuberculosis

(Continued on Page 820)

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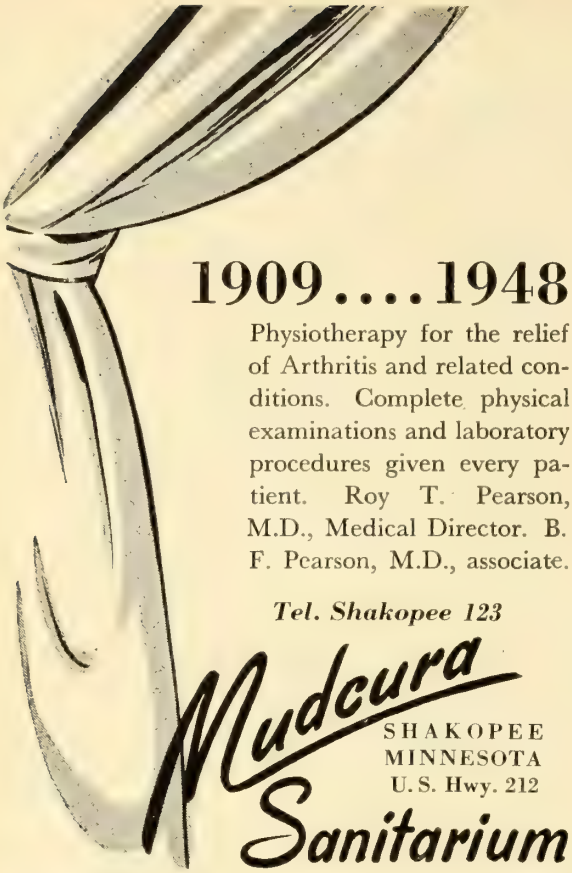
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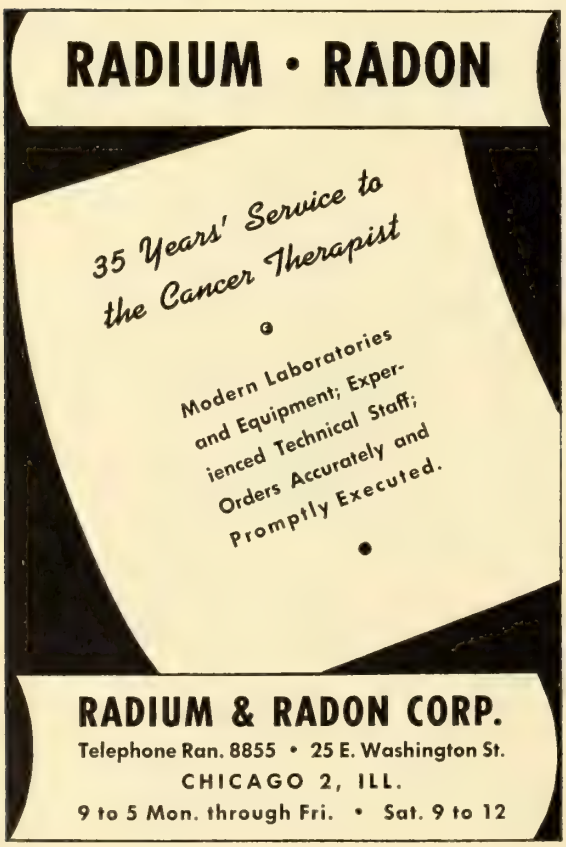
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(Continued from Page 818)

control officer; Dr. F. J. Hill, Minneapolis health commissioner; Dr. Thomas J. Kinsella, Minneapolis; Dr. E. S. Mariette, medical director of Glen Lake Sanatorium, and Dr. Sumner S. Cohen, Dr. L. M. Larson, Dr. P. M. Mattill, Dr. F. C. Nemec, Dr. E. P. K. Fenger and Dr. V. K. Funk, staff members of Glen Lake Sanatorium.

* * *

Dr. Elmer C. Paulson, formerly of Elbow Lake, moved to Minneapolis late in June after receiving an appointment to a fellowship in radiology at the University of Minnesota Medical School. Dr. Paulson, a Fergus Falls resident before the war, had opened a practice in Elbow Lake following his discharge from the army in 1946.

* * *

It was announced in Bemidji on May 20 that Dr. G. A. Miners, formerly of Deer River, had arrived in Bemidji to assume the duties of director of District 1, Minnesota Department of Health. Dr. Miners fills the position previously held by Dr. P. T. Watson, who was transferred to the state office in Minneapolis in January, 1947.

* * *

Five Edina (Minneapolis suburb) physicians offered their services early in June in conducting free examinations of all youngsters participating in the Edina Park Board's supervised swimming classes at Lake Calhoun. The physicians who volunteered to perform physical examinations were Dr. Francis M. Walsh, Dr. Mary Galligan, Dr. Robert Tinkham, Dr. C. V. Rockwell and Dr. I. H. Moore.

* * *

The seventy-fifth birthday anniversary of Dr. C. S. Bossert, Mora, was celebrated by a surprise dinner party for him at the Braham Hospital on May 27. Dr. Bossert has been a staff member of the hospital since it opened in December, 1947. A graduate of the University of Pennsylvania in 1908, Dr. Bossert has been located in Mora since 1914.

* * *

The sixteenth annual convention of the American Society of Medical Technologists was held in Saint Paul during the week of June 7. About 500 delegates from throughout the country attended. Convention activities included a seminar in hematology at the University of Minnesota Continuation Center and a trip through the Mayo Clinic in Rochester.

* * *

Principal speaker at the first annual countywide Public Health Dinner, held in St. James on May 19, was Dr. R. N. Barr of the Minnesota Department of Health. Speaking on the topic, "Economic Conditions of Public Health," Dr. Barr explained how money for public health is used and how public health districts are set up. He also described some of the recent health legislation.

* * *

After thirty-six years of school service in Tracy—twenty-four of the years as president of the school board—Dr. W. H. Valentine was honored at a ceremony on May 28 by members of the local high school senior

(Continued on Page 822)



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(Continued from Page 820)

class and by the Tracy Civic and Commerce Association. In observation of his retirement from the school board, scheduled for July 1, Dr. Valentine was presented with an honorary plaque and a desk pen set.

* * *

The Hopkins post of the Veterans of Foreign Wars planned to honor Dr. James Blake, pioneer Hopkins physician, in a special ceremony during the 1948 Raspberry Festival, an annual celebration in the city. Three of Dr. Blake's sons, physicians all, Drs. James A., Allan and Paul, are members of the Hopkins VFW post. Details of the ceremony had not yet been worked out at the time announcement was made of the proposed honor.

The degree of doctor of science (opthalmology) was conferred upon Dr. Bourne Jerome, Minneapolis, by the University of Pennsylvania on June 9. The degree was granted for graduate work carried on at the school by Dr. Jerome both before and after service in the recent war. A graduate of the University of Minnesota Medical School in 1935, Dr. Jerome is associated in the practice of opthalmology with Dr. Karl E. Sandt and Dr. W. J. Bushard, Minneapolis.

* * *

The President's Certificate of Merit was presented to three Mayo Clinic staff members in a ceremony at Rochester on May 18. Receiving the award were Dr. Earl H. Wood, Dr. Edward H. Lambert and David M. Clark. Mr. Clark is a textile engineer who worked with the two doctors in developing a pilot's anti-blackout g-suit. Presentation of the Certificate of Merit was made by Rear Admiral F. L. Conklin, commandant of the ninth naval district.

* * *

Principal speaker at the third annual medical conference sponsored by the Minnesota American Legion at Fort Snelling on June 10 was Major General Carl R. Gray, Jr., national head of the Veterans Administration. The conference, to discuss the present and future status of medicine and hospitalization for veterans, was attended by veterans' officials from Minnesota, North Dakota, Nebraska and Iowa, and by physicians from the University of Minnesota Medical School and the Mayo Clinic.

* * *

On May 20, Dr. J. F. DuBois of Sauk Centre was reappointed by Governor Luther Youngdahl as a member of the State Board of Medical Examiners. First appointed to the board in 1927, Dr. DuBois will serve for a seven-year term.

Earlier in the week, at a meeting of the Sauk Centre Rotary Club, Dr. DuBois said that over-specialization in medicine is leading towards socialism. "Our system grew up around the family doctor," he stated. "If everyone specializes, there will be only one agency which can afford medical care. That is the government—in other words, socialized medicine." He said that socialized medicine would be "the entering wedge for socialism

(Continued on Page 824)

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(Continued from Page 822)

throughout the country." He urged that the best way to meet problems of medicine was by internal action of the profession itself against over-specialization and by preparatory plans on the part of the general public to insure themselves in recognized hospitalization and health plans.

* * *

Honored at the recent meeting of the Minnesota State Medical Association for completing fifty years of medical service in the state were thirteen Minnesota physicians.

The thirteen practitioners, each with at least fifty years of state practice to his credit, were Dr. Gerhard A. Dahl, Mankato; Dr. William F. C. Heise, Winona; Dr. Aloysius S. Fleming, Dr. Axel E. Hedback, Dr. John R. Peterson, Dr. Carl J. Lind and Dr. N. H. Sheldrup, all of Minneapolis; Dr. Leon A. Williams, Slayton; Dr. Frank E. Burch, Dr. James S. Gilfillan and Dr. Asa M. Johnson, all of Saint Paul; Dr. Joseph G. Parsons, Crookston, and Dr. William J. Torgerson, Oklee.

* * *

Golfers who complain at driving five or ten miles to play golf should consider the determination of Dr. J. J. Catlin of Buffalo. He drives ninety miles for a game of golf, and does it two or three times a week!

Always on Thursday and usually on Sundays and Wednesdays, the sixty-seven-year-old physician makes the forty-five mile jaunt from Buffalo to the Twin Cities to try out the various Saint Paul and Minneapolis courses. In addition, he plays almost every evening on the Buffalo golf course. Dr. Catlin, who didn't start playing golf until he was over forty, says that golf is the "best medicine in the world. I tell all my patients to try it." He usually shoots in the 80's.

* * *

HOSPITAL NEWS

Articles of incorporation were being drafted early in June for the Aitkin Community Hospital Association. Decision to incorporate was made at a meeting in Aitkin on May 21, attended by members of the local hospital committee and interested citizens. The incorporators were made up of a nine-man board of directors.

* * *

With the resignation of Miss Inez Lewison as superintendent of Northfield City Hospital, effective July 1, the Northfield hospital board in May appointed Mrs. Myron Ellingboe to the position. Miss Lewison resigned to become surgical supervisor of a new sixty-bed hospital in Glencoe. Mrs. Ellingboe has been assistant superintendent of the Northfield hospital for the past two years.

* * *

At the annual meeting of the board of trustees and members of the association of the Community Hospital in Princeton on June 8, it was announced that the small hospital had not only stayed on the black side of the financial ledger during most of 1947 and part of 1948 but had shown a profit of $2,750 for the period.



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More than 1,000 hospital officials from throughout the Northwest and Manitoba, Canada, met for a hospital conference in Minneapolis during the first week of June. Among the speakers at the meeting was Dr. Charles W. Mayo, Rochester, who spoke at a dinner meeting of the group on June 4.

* * *

BLUE SHIELD NEWS

Persons covered by Blue Shield as of June 15, 1948—26,369
Number of Blue Shield cases paid on June 15, 1948—201
Total for 1948—553

Amount paid on Blue Shield cases on June 15, 1948—$ 7,083.50
Total for 1948— 20,486.16

At the convention of the Minnesota State Medical Society June 7, 8, and 9, 1948, in the Minneapolis auditorium, the Minnesota Blue Shield exhibit consisting of material pertaining to the Blue Shield plan was set up mainly to answer questions raised by the doctors attending the convention and also to enroll any doctors who were not Blue Shield participating doctors of medicine. Of the few additional doctors who were signed up, it was found that they had either just completed their internship or recently returned from service. We are very glad to add their names to the roll of Blue Shield participating doctors of medicine.

There were many requests for information pertaining to Blue Shield. The largest request was for Blue Shield representatives to visit the towns and also for them to call at the doctor's office for discussion. As a result all representatives have been instructed to call on the doctors in the towns they visit, so calls from them can be expected.

A frequent query was, "When is Blue Shield going to be offered in our town?" It will be offered in all towns just as soon as possible. At the present time there are twenty representatives in the state. We know this number is inadequate, but more are being put on all the time. At present these representatives are only following up groups that have requested enrollment, because we feel that it is only fair that the established groups should have Blue Shield first. In the Blue Shield office there are hundreds of cards requesting representatives to discuss enrollment with groups, and these requests are getting first priority. Therefore, if a representative does not get to your town immediately, please be patient, for one will be there soon.

It was suggested by some of the doctors attending the convention that material be supplied for their waiting rooms. Blue Shield literature for this purpose is being prepared and will be sent to you.

When the Blue Shield representative calls on you please give him any requests you may have received for group enrollment, also ask him any questions you may have or give him any suggestions. He will return them to this office and necessary action will be taken.

May we again state that this is your plan and it is within your power to make or break it. Those of us in the office do not know how you feel about Blue Shield unless you voice your opinions. We are always open to suggestions and want them. So help us make your plan the best.

Reports and Announcements

IDAHO STATE MEDICAL ASSOCIATION

The entire guest faculty for the fifty-sixth annual session of the Idaho State Medical Association, held July 6 through 8 at Sun Valley, Idaho, consisted of five University of Minnesota Medical School staff members. The five lecturers were Dr. Owen H. Wangensteen, director of the department of surgery; Dr. Donald W. Hastings, chief of psychiatry and neurology; Dr. Edward P. Burch, assistant professor of ophthalmology; Dr. Frederick W. Hoffbauer, assistant professor of medicine, and Dr. Leonard A. Lang, clinical assistant professor of obstetrics and gynecology.

MINNESOTA SOCIETY OF INTERNAL MEDICINE

The semi-annual meeting of the Minnesota Society of Internal Medicine was held as a one-day session in Duluth on June 5. Fourteen papers and discussions comprised the program, which was presented at St. Mary's Hospital.

In charge of the session was Dr. D. W. Wheeler, Duluth, president of the society. Among papers presented by Duluth physicians were "Acute Coccidioidomycosis" by Dr. Sam H. Boyer, Jr.; "Acute Coronary Inadequacy" by Dr. Robert L. Nelson; "Hyperparathyroidism" by Dr. J. J. Coll, and "A Ten-Year Review of Seventy-five Cases of Uremia" by Dr. Arthur H. Wells and Dr. William D. Coventry. Other scientific discussions were given by physicians from Rochester and the Twin Cities.

FEE SCHEDULES FOR PUBLIC AGENCIES

(Continued from Page 758)

to render better medical care to groups cared for from public funds, and while we want free choice of physician and fee for service, we must accomplish this in both an efficient and an ethical manner. Eventually what is best for the public will be best for the medical profession. Our plans must include the full use of existing institutions such as state hospitals for insane and tuberculous as well as charitable institutions. In particular, plans must be made to provide our teaching institutions with ample teaching material.

The medical profession will need to accept the entrance of the agencies into this effort. To them must go the responsibility for determining who is entitled to care. Also to them must go the right to infringe on free choice of physician. In Nebraska very definite limitations are placed on what osteopaths, chiropractors and optometrists can do. Likewise, some limitation must be placed on what doctors of medicine can do. All doctors are certainly not capable of rendering all types of medical care. In special cases, specialists' care must be obtained. The officers of the agencies will need to have directive authority in these cases. Here, in particular, the medical profession must give wise and conscientious counsel, and this counsel must be accepted by the agencies.

The Nebraska State Medical Association is suggesting that agencies paying for medical service from public funds, and members of the medical profession, study our schedule carefully; that they use it in making agreements for medical service; that in cases where the printed fees seem too high or too low, they bargain only on where to place the unit value; that information as to agreements be promptly forwarded to the state medical office. We also request of the profession that suggestions as to changes in the number of credits be sent to the state medical office.

This effort can come to naught, or it can be an instrument of advantage to all and an important step toward better relationship between the medical profession and the public.



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BOOK REVIEWS

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LINICAL LABORATORY METHODS AND DIAGNOSIS. Fourth Edition. R. B. H. Gradwohl, M.D., D.Sc., F.R.S.T.M. & H. (London). Director of Gradwohl Laboratories and Gradwohl School of Laboratory Technique; Pathologist to Christian Hospital; Director Research Laboratory, St. Louis Metropolitan Police Department, St. Louis, Mo.; Commander Medical Corps, U. S. Naval Reserve, Ret.; Fellow American Public Health Association; and Dr. Pedro Kouri, Director Institute of Tropical Medicine; Professor of Parasitology and Tropical Medicine; Vice-Dean of the Faculty of Medicine, Havana University; Director of Laboratories Kuba, Havana, Cuba. Vols. I and II, 2284 pages and Index 127 pages; Vol. III, 864 pages. Illus. Price, 3 Vols., $40.00, cloth. St. Louis: C. V. Mosby Co., 1948.

ORRELATED NEUROANATOMY. Fourth Edition Revised. Joseph J. McDonald, M.S., M.Sc.D., M.D., Joseph G. Chusid, A.B., M.D., and Jack Lange, M.S., M.D. 156 pages. Illus. Price $3.00, paper cover. Palo Alto: University Medical Publishers, 1947.

HANDBOOK OF OPHTHALMOLOGY. Everett L. Goar, A.B., M.D., F.A.C.S. Professor of Ophthalmology, Baylor University College of Medicine, Houston, Texas. 166 pages. Illus. Price $5.50, cloth. St. Louis: C. V. Mosby Co., 1948.

CLINICAL OPHTHALMOLOGY. For General Practitioners and Students. H. M. Traquair, M.D., F.R.C.S., Ed. Consulting Ophthalmic Surgeon, Royal Infirmary, Edinburgh, Ophthalmic Surgeon, Chalmers Hospital, Edinburgh, Oculist to the Edinburgh Municipal Hospitals; late lecturer on Diseases of the Eye, Edinburgh University. 264 pages. Illus. Price $9.00, cloth. St. Louis: C. V. Mosby Co., 1948.

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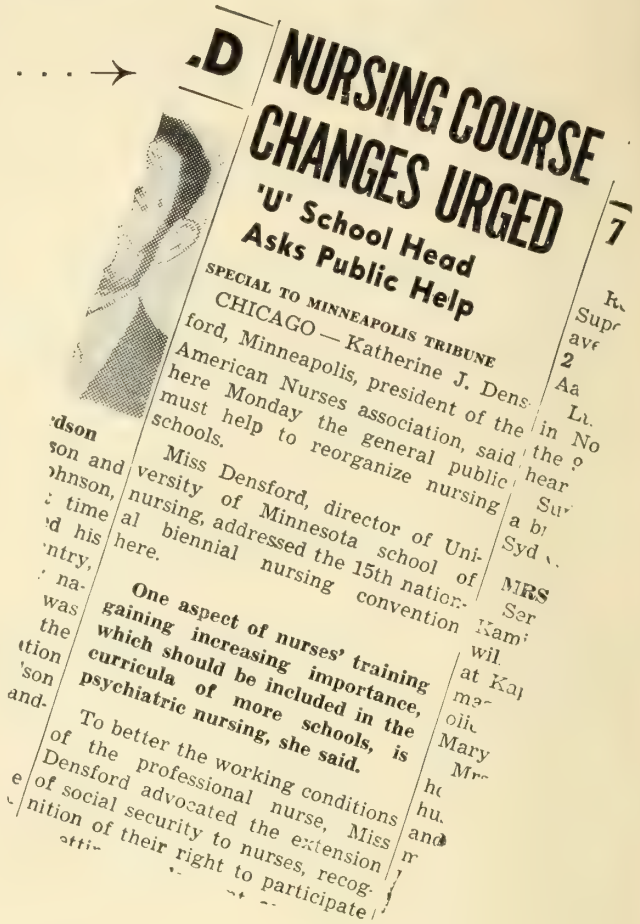
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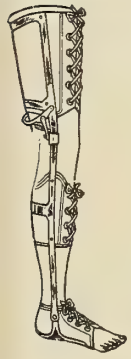
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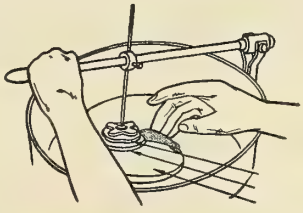
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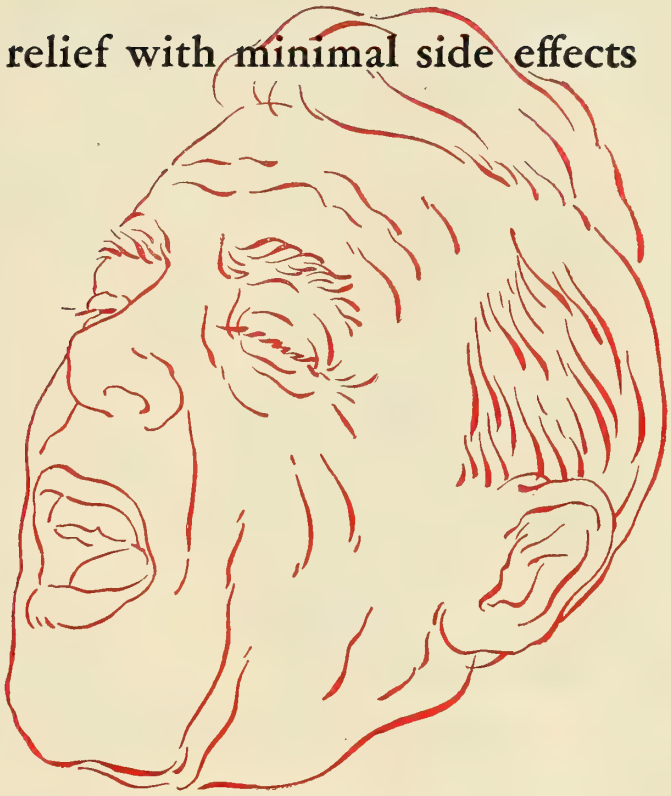
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1. Arbesman, C. E.: *N. Y. State Jl. of Med.*, 47: 1775, 1947.
2. Loveless, M. H.: *Am. Jl. of Med.*, 3: 296, 1947.
3. Bernstein, Rose and Feinberg: *Ill. Med. Jl.*, 92: 2, 1947.
4. Osborne, Jordon and Rausch: *Arch. of Derm. & Syph.*, 55: 318, 1947.

Pyribenzamine Scored Tablets, 50 mg., bottles of 50, 500 and 1000.
Pyribenzamine Elixir of 5 mg. per cc., bottles of 1 pint and 1 gallon.

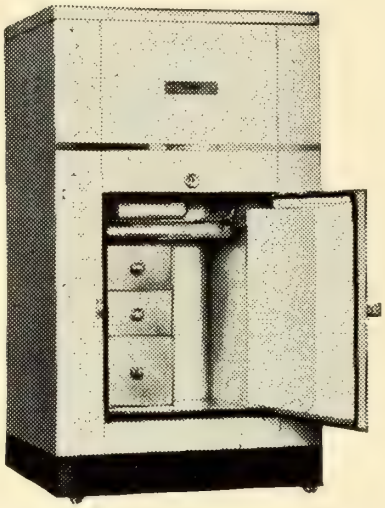
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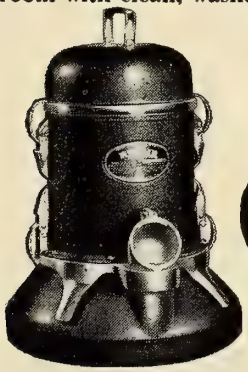
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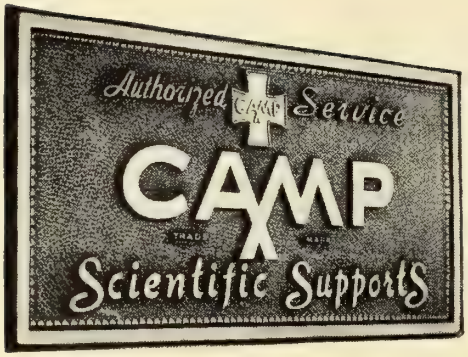
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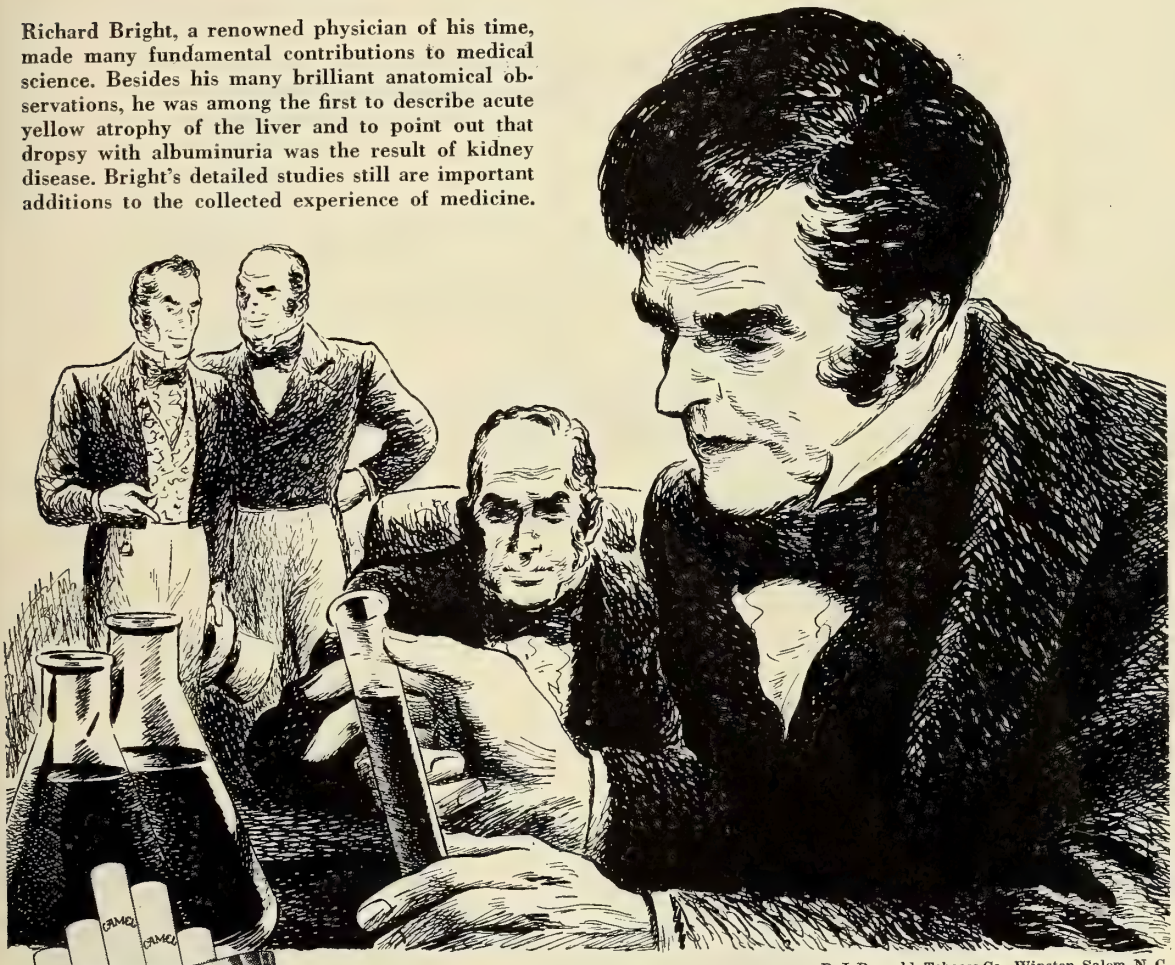
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BIBLIOGRAPHY: 1. United States Dispensatory, ed. 24, Philadelphia, J. B. Lippincott Company, 1947, p. 1446. 2. Wiesbader, H., and Filler, W.: Am. J. Obst. & Gynec. **51**:75, 1946. 3. Allen, W. M.: South. M. J. **37**:270, 1944. 4. Lyon, R. A.: Am. J. Obst. & Gynec. **47**:532, 1944. 5. Groper, M. J., and Biskind, G. R.: J. Clin. Endocrinol. **2**:703, 1942. 6. Soule, S. D.: Am. J. Obst. & Gynec. **45**:315, 1943.

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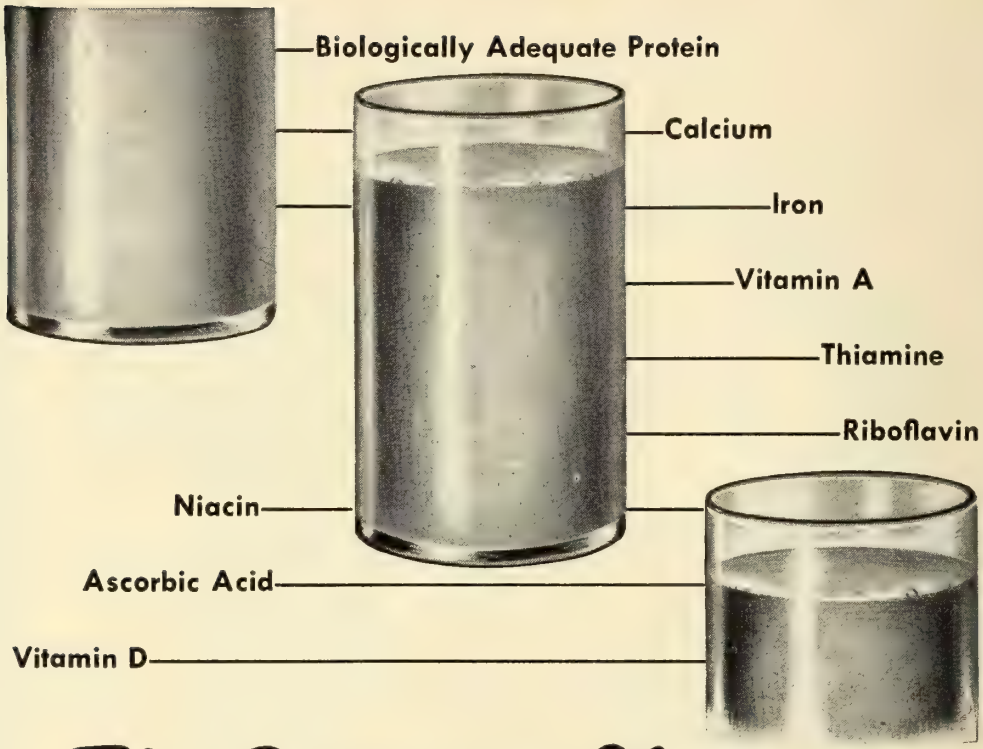
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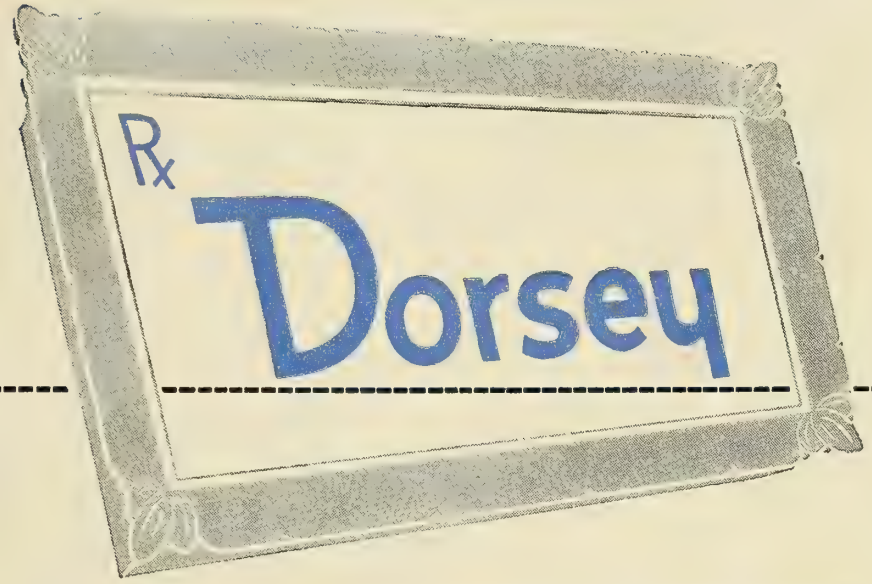
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You can obtain the Petechiometer only at drug stores displaying the familiar blue and white Rexall sign—your assurance of drugs manufactured under rigid laboratory control, compounded with superior pharmacal skill. Your Rexall druggist will be glad to tell you more about the Petechiometer. Or write to Rexall Drug Company, Los Angeles, California.

**Petechiometer is a registered trade-mark owned by the Rexall Drug Company covering a clinical device for the measurement of capillary fragility.*

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There'll be fewer sleepless nights this season



BY JULIO DE DIEGO

THE INTRODUCTION of Abbott's new antihistaminic, THENYLENE Hydrochloride, means that more allergic persons than ever before will be working, playing, sleeping in greater comfort. Some hay fever patients will be symptom-free; others will experience relief to a lesser degree. Side-effects will be limited.

In a series of 112 patients with seasonal hay fever (including pollinosis caused by trees, grass, weeds and molds) it was reported that 70 percent were benefited following treatment with THENYLENE Hydrochloride. From a number of independent investigators come reports on various allergies treated with THENYLENE: in a total of 695 such cases, 67 percent were benefited. A significant number of patients in one test group who received several different antihistaminics, reported a better tolerance for THENYLENE, with fewer side-effects.

While no harmful effects have been reported, a total daily dose exceeding 400 mg. (0.4 Gm.) is not recommended, nor continuous use of the new drug beyond eight weeks.

If you would like to try this new antihistaminic, just drop a line to Abbott Laboratories asking for your professional sample and descriptive literature. Or ask your pharmacist—he has THENYLENE Hydrochloride in sugar coated tablets of three sizes, 25 mg., 50 mg. and 0.1 Gm. in bottles of 100, 500. ABBOTT LABORATORIES, North Chicago, Ill.

prescribe **Thenylene®** **Hydrochloride**

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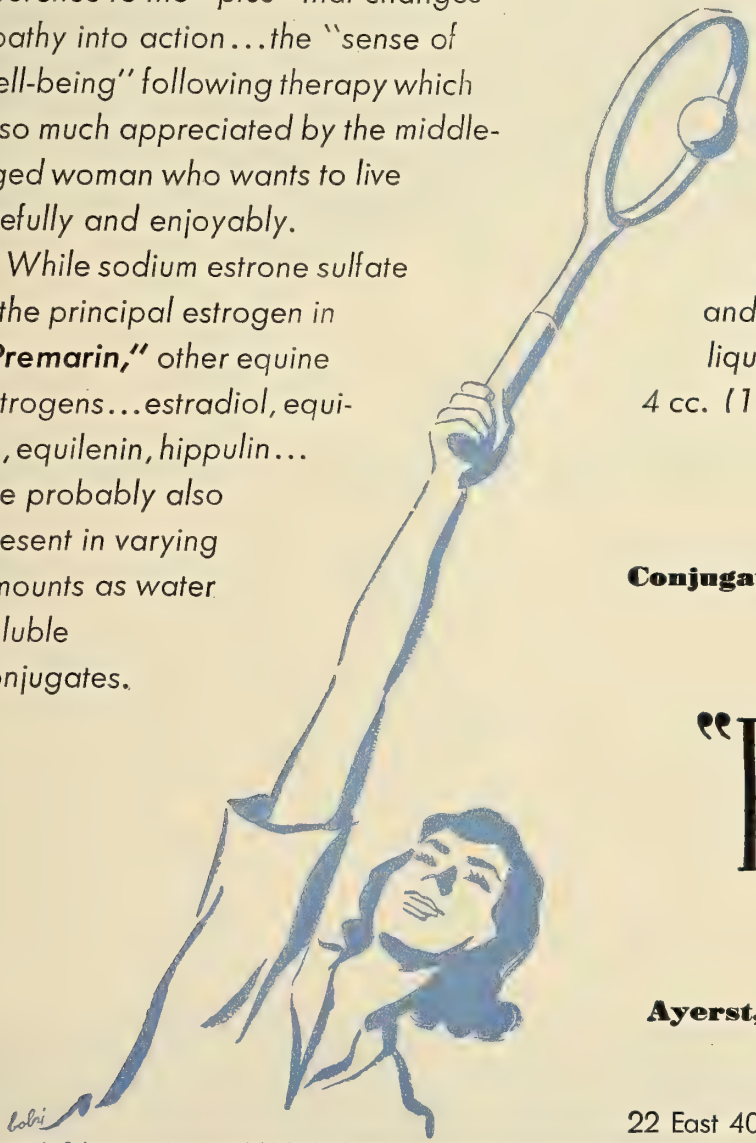
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Three potencies of **"Premarin"** *enable the physician to fit the dosage to the individual needs of the patient: 2.5 mg., 1.25 mg. and 0.625 mg. tablets; also in liquid form, 0.625 mg. in each 4 cc. (1 teaspoonful).*

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Conjugated Estrogens (equine)

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 **August, 1948** **No. 8**

THE NEW LOOK IN MEDICINE

A. E. CARDLE, M.D.
Minneapolis, Minnesota

GEORGE BERNARD SHAW once made the typical Shavian statement that "The ice of life is slippery." It seems to me that this statement has more than ordinary significance for the great social order of medicine. The road of medical practice throughout the ages has had the same characteristics as Shaw's "Ice of Life"—hard-cold —slippery. It has consistently been a difficult road. The reception of the lay public has often been cold. And right at this point in history, I dare say, the medical practitioner, whether he realizes it or not, faces a set of circumstances which are the most slippery that have ever confronted his profession.

Tonight we need not be too concerned about the hardness of the road, for worthwhile achievement in any line has always been attained at the price of hard work. No physician who is worthy of the name has any unwillingness about paying the price, in terms of hard work, which his calling demands. We likewise need not be too concerned about the cold skepticism which in the past has often greeted our efforts in the realm of medical research. Broader education has brought the lay public to the realization that such research is essential to its own personal well-being. However, tonight I do wish to talk to you about the currently ice-like situation which confronts us in medicine—the slipperiness underfoot as we move ahead on a path filled with greater responsibility than medical men have ever before faced. That path, according to our own choosing, can lead to higher levels of medical achievement and human welfare under professional initiative, or it will retrogress to a level of enforced mediocrity.

The direction in which our profession moves along this path is largely dependent on what you and I as individual physicians do—not one year, five years, or ten years from now, but tomorrow and the next day and every day. Let us take stock, therefore, of the assets at our disposal, which we must utilize to the fullest if we are to have public opinion firmly on *our* side instead of having it flirt with government-dominated medical care.

Without question the Number One asset of today's medical man is the personal and professional respect which he commands. Every one of us here tonight possesses a generous measure of that asset. Over the span of our careers it is far more valuable than stocks, bonds or bank balances. This respect springs from a variety of sources. Self-sacrifice is one of them. The country doctor who made his rounds in a horse-drawn buggy in bitterest weather had a tremendous reservoir of respect in his local community. We are out of the horse and buggy days now, but countless doctors who daily demonstrate similar devotion to their calling and an equal measure of human kindness have just as great a backlog of respect. Education is another source of this respect. Today when bachelor's degrees are becoming commonplace, the doctor of medicine continues to advance to an ever-higher plateau of learning which not only enables him to keep pace with increased demands of his profession but enlarges his potentiality for community leadership. Confidence is another wellspring of respect.

Presidential Address, read at the annual banquet of the Minnesota State Medical Association, Minneapolis, Minnesota, June 8, 1948.

Basically, I believe the confidence of the layman in the physician represents a confidence in the standards of professional medicine. As the physician discharges his responsibilities in keeping with those high standards, he is automatically an heir to the respect which stems from the public's confidence in the profession as a whole. I could name other sources of this invaluable asset of public respect—they are too numerous to mention, and each of us has his own personal store of them. One which has reflected lasting credit on the profession as a whole is the magnificent humanitarianism and selflessness displayed on the battlefronts of the late war by many members of our group.

Now assets, whether they be of the tangible type found in the world of commerce, or of our own less tangible kind, are valuable only to the extent that they are put to proper use. And what a challenge we medical men face today to put our assets consciously and boldly to work to promote the public welfare by promoting the things for which we stand! Let's look for a moment at the factors which today demand that we put these assets to work if our ability to serve is to go unimpaired.

First of all, we all recognize that the same forces which have materially altered the social order during the past several decades, and which more than ever before have increased the importance of the individual citizen, have likewise brought about significant changes in the attitude of the citizen toward his doctor. These forces and the attitudes which they create are at work in both directions, that is, doctor to layman and layman to doctor. Just as today's age of speed makes obsolete the old horse and buggy mode of operation, so it places new and ever-greater demands on the modern doctor. He must cover more ground, minister to more patients, and at the same time keep abreast of accelerating scientific advancement. Because even we doctors are human, it is only natural that oftentimes our daily services are rendered more hurriedly and with a less personal touch than in days past. We are likely to forget that the individuals with whom we deal by the score are just as human and just as desirous of receiving adequate personalized attention as were the patients of yesteryear with whom the doctor dealt leisurely in ones and twos.

On the other hand, the layman of today has evolved into a creature more *inquisitive* and more demanding of his physician than patients ever before have been. The modern American mind is also extremely receptive to emotional appeals, which fact in no way makes the doctor's job any easier. One result is that public attitudes tend to be strongly influenced in favor of the side which gets its story across more clearly and more completely, assuming, of course, that the story is a good one. This emotional influence cannot be ignored in the physician's daily scheme of operation.

By this time you may be thinking: "Well, what does this have to do with me? Don't tell me this fellow is going to start advising me how to run my practice!"

Fortunately, no. That would be impossible even if I wished to do it, because, thank goodness, the medical profession is still a stronghold of unfettered intelligent initiative. But—let us right here and now resolve not for a single minute to lose sight of the fact that the sum total of the daily conduct of our individual practices is entered on the debit or on the credit side of American medicine. Your relations and my relations with our respective clients help to make or break the ability of medicine to continue performing a high calibre of service for the American people and for the world.

Let us not for a minute delude ourselves with any notions of a public which over all is deeply thankful to us for work schedules which include long, irregular days and fatiguing, interrupted nights. A common notion is that the doctor is seldom immediately available because he is forever running around enjoying all his leisure time. Let us not be complacent in the satisfaction that the statements we tender our patients at the end of the month generally represent excellent value received because *we* know the toil and the concern which have gone into our ministrations. The patient has been told repeatedly by certain groups who take pains to get into public print that he is being cheated. Now he is beginning to believe it. (Why shouldn't he? No doctor has ever told him anything to the contrary!) And let us not be too gratified by the fact that we recognize today's superior medical service is possible only because the American procedure is established upon the bedrock of scholarliness, integrity and sound achievement. How *we* feel about our profession is important, but how *the public* feels about us is of even greater significance.

Right now the cold, blunt facts are that, despite its heritage of remarkable achievement, American medicine—and that means you and me, who are a part of it—is facing the severest kind of criticism which, if unanswered, promises to lead to consequences that will inevitably be regrettable and inimical to the welfare of American society.

I hope you won't misunderstand me. When I imply that our critics should be answered, I do not mean that American medicine should go on the defensive. American medicine does not have to go on the defensive. What it does have to do is to take out from under the bushel the light which will reveal that modern medicine is more than just alive and kicking. That it has a heart and soul. It is imperative as I see it that we medical men merchandise our assets to the end that our profession is unquestionably allied with the public interest—so that our endeavors and objectives will be readily recognized by the average citizen as being identical with his health and welfare, and duly considerate of his pocketbook.

One sure avenue in that direction is to drop some of our unwarranted reticence. We must stop looking at ourselves for a change and begin looking at the other fellow who makes up our clientele. We must get on somewhat more common ground with him, in our attitude, in our language, and in the small amenities of everyday business, which he will appreciate, and which are certain to redound favorably to us in our growth in the profession.

Let me report one or two current criticisms which I believe are fairly typical: A few days ago a friend of mine was heard to say, "It has been my experience that the better qualified a doctor is professionally, the less inclined he seems to be to spare even a reassuring word of sound information to his patients. Frankly, I pay my fees to my doctor for something more than simply to hear him grunt when I ask him a reasonable question." In days gone by when public curiosity was less keen and the physician's word represented unquestioned authority, the doctor's "grunt" was somewhat more passable, if no less ill-mannered. Today, however, it connotes just one thing—a public-be-damned independence which insults the patient's dignity. One thoughtless doctor multiplied by one patient who has been slighted can work untold ill toward the professional cause of all of us. If many doctors the country over indulge in this single expensive luxury of abruptness, the equation reaches astronomical proportions.

Not that a successful medical practice depends on devoting a large portion of our time to pampering prima donna patients. But, somewhere there always exists a middle ground, a happy medium in human relations which it is part of the intelligent doctor's job to detect, and to apply.

Here's another increasingly common criticism: A couple of weeks ago an executive of a large corporation, a man in good circumstances, was irritated because his daughter's overnight stay in a hospital following tonsillectomy had resulted in what he considered a greatly excessive charge. Whatever the justification for this charge, it came as a shock to this person of good means. We can only assume it would have been nothing short of staggering to the average working man. Does such a situation disturb you? It does me, because in the mind of the lay public the distinction between medical and hospital expenses is practically non-existent. If anything, the cost of hospital care is associated with the physician himself and he is given the blame if that cost seems exorbitant. I venture that there is no one here tonight who has not suffered some blame because the medical world has failed to hammer home this distinction.

Let us not underestimate the mounting public feeling over this situation. While hospital costs are a factor not readily controllable by physicians themselves, the reflection which they are currently casting upon our profession behooves us to give serious consideration to a clear-cut public explanation of these costs and the reasons why the doctor is not to blame for them (except in the injudicious use of expensive laboratory procedures). I have yet to see a situation where the public, if given the facts in understandable language, does not respond with sympathetic understanding, which in this instance would be of untold benefit to us.

The formidable accumulation of circumstances coming to bear on modern medical practice from all directions is not unlike a snowball gathering both bulk and momentum as it rushes down hill. This combination of circumstances sets the stage of public opinion for a medical panacea which promises something twice as good at half the cost or less, just as surely as the stage was set a couple of decades ago for economic panaceas

which would free the populace from the humdrum drudgery of earning a living and paying taxes.

"Well and good," you may be saying. "If that's the case, why not just sit tight and let nature take its course? After a while things will return to normal and the pressure will be off. Why get excited?"

I hope that not too many doctors are viewing the situation that way. Those who do are, in my opinion, letting their professional obligations and their future go by default. For one thing, it is idle to look for a return to "normal" in the sense that prewar medical practice was normal. Medical science has received its own dose of jet propulsion during the past six or seven years and it promises to keep all of us moving faster in the discharge of our duties throughout the foreseeable future. If the medical schools continue to produce graduates at the present rate and if Uncle Sam becomes more liberal in the release of medics now in the armed forces (which at present seems more unlikely than ever), we might without too much difficulty be able to maintain a constant level of satisfactory service to all clients desiring it. That is—if the proportion of the population needing such services were to remain constant. But—the growth of geriatrics is enabling more and more people to reach the age brackets where the incidence of ill health places a proportionately greater strain upon the medical services. Whereas in 1900 only 3,000,000 U. S. citizens were over sixty-five years of age, in 1940 there were 9,000,000, and under present trends it is estimated that in 1960 there will be 14,000,000, and in the year 2000 there will be 21,500,000 over the age of sixty-five.

To some this trend might be a clear-cut case for government action. But, a great many of your friends and mine will be among those 14,000,000 who in 1960 will be sixty-five or older. Those people are no less human and no less deserving of the high calibre service which American medicine has been accustomed to give than are those who are sixty-five today. As great as is the challenge presented by this expanding need for medical service, I do not believe it is too great for our combined abilities, any more than I believe that it can be satisfactorily met through some mysterious pushbutton planning. On the contrary, it seems to me that this challenge calls for the prompt, continuous, logical application of those assets which we have in ample store but which we have by custom failed to exploit fully. Hard work will not be enough, although there will be plenty of that. Equally important will be a purposeful dedication of our thoughts and energies toward more efficient, common-sense means of performing our duties, to the end that the greatest possible service will be rendered to the greatest number at a cost which may readily be regarded as reasonable.

Admittedly this is an ideal. But it is not an ideal in the sense that it is far beyond attainment. We *must* attain someting approximating this and we must periodically make public our progress toward this attainment if the privilege of aiming at this goal is to be left in our hands. This challenge for greater service will not be met by pronouncements from public platforms. It will not be met in the medical convention halls. It will not be met in the technically phrased trade journals. It can be met only by you, the doctor on the home-town firing line, working as an individual professional man and in concert with doctors the country over as a member of a socially conscious medical fraternity.

It is not too much to say that your every social and professional word and act can be a valued enlistment in this cause. But to do so it must be consciously geared to the new look in medicine which calls for closer harmony and more mutual appreciation between doctor and patient, between doctor and layman, between doctor and business man, between doctor and civic leader, between doctor and editor.

Every one of us has his own traits and his own circumstances with which to cope, so it is unwise to be too dogmatic or to rely on a pat formula by which we may be guided in making our individual contributions toward meeting today's challenge to medicine. But in these closing moments I cannot help but pass along to you a few simple "fashion hints." To many of you these may sound as old as the bustle or the hoop skirt, but they are definitely a part of the "new look" in medicine which is called for by these times:

Let us get better acquainted with men in occupations unrelated to medicine, and enable them to take a closer look at us. The doctor whose presence at a social function consists of sitting off in a corner talking shop with another doctor may be adding in a small way to his knowledge, but he is losing out in a big way on the oppor-

tunity to let others in the groups outside of his profession get a better appreciation of medical science and the men who are engaged in it.

Let us polish up our good citizenship. An "M.D." should be the hallmark of leadership in the eyes of every layman, and many a doctor is living up to that leadership, although too often it is confined to purely medical projects. Too many doctors still regard civic, educational and social service endeavors either "a little out of their field" or "too demanding on their time." We cannot arouse public enthusiasm for our cause if, in the limelight of the professional arena, we dodge our civic responsibilities.

Let us avoid long-hair phraseology which suggest that we are hiding behind a cloak of technical knowledge. Many a patient would feel he is receiving more satisfactory treatment if common one and two syllable words were substituted for medical mumbo-jumbo he cannot understand.

Let us make a conscious effort to be visibly interested in our patients as personalities. Our manner should clearly indicate that their problems are our foremost concern of the moment. It is time we doctors stopped making laymen discount our attitude toward them with such observations as, "Well, Dr. Jones is a busy man and deeply absorbed in his work. I suppose that's what makes him a little peculiar."

Let us wear a friendlier smile. I do not mean that every doctor should have a petticoat of white teeth showing beneath the hem of his upper lip, but a sincere smile that springs from within can do more to set a patient and his family at ease—and again to make him feel satisfied that he is getting valuable personal attention—than can any recitation of formidable medical facts.

Let us give more credit when and where credit is due. To my knowledge, no doctor has ever hurt his own reputation by publicly praising outstanding work of another doctor. There is reason to believe that a little more of such justifiable praise would do much to allay the common misconception that medical men are split by wide personal differences and jealousies.

Let us take a more active part in the efficient operation of our hospitals. The public will sympathize with us when we explain that high hospital costs do not originate with us, but they will not excuse us from the responsibility of working to keep those costs down and to make adequate hospital care financially possible for broad segments of the citizenry.

Let us keep abreast of national affairs and national policies, particularly as they affect medicine.

Let us determine to gauge all our actions by their potential effect on our clients and on the public. Only then can we expect that the public will vigorously agree that medical men still know more than anyone else how to run their own business. Complacency and aloofness must give way to agreeableness, aggressiveness, sociability and well-mannered salesmanship.

These represent just a starter. Many of you are already ahead of me; you are analyzing your own situations and adding more precepts which these situations suggest. As I visualize the great reserves of energy, ideas, brains, skill and humaneness on which American medicine, as symbolized by yourselves, can draw, I cannot help but feel that the impending challenge will be met. I feel certain that meeting it will bring out the best that is in us. And I believe that the story of our preparedness and determination to meet that challenge will merit the kind of respect that will clear the ice from underfoot, and permit American medicine to continue forward on a solid path of public appreciation and public approval.

HOSPITAL CONSTRUCTION ACT PROGRESS

Progress under the Hill-Burton Act (Public Law 725) is far better than most proponents of the Act expected. Only six months have passed since approval of the first project, yet (July 1) 347 projects have been approved in forty-two states. Also contrary to expectations, the program is reaching into areas really in need of additional facilities.

The picture on May 15, 1948, was as follows (July data not available): forty-six states and territories have state-wide plans approved; 39 million dollars are involved in 272 construction projects approved in thirty-one states. The 272 projects include: 244 hospitals, 23 health centers, and 5 auxiliary facilities.

Most of the 212 proposed general hospitals are under 50 beds: Under 25—51; 25 to 50—76; 50 to 75—52; 75 to 100—10; 100 and over—23.

Most of these general hospitals will be located in rural communities: 93 in towns under 2,500 population; 47 in towns 2,500 to 5,000 population; 35 in towns 5,000 to 10,000 population; 23 in towns 10,000 to 25,000 population; 4 in towns 25,000 to 50,000 population, 10 in towns 50,000 population and over.—News Letter, Council on Medical Service, A.M.A., Vol. V, No. 6, July 22, 1948.

PRACTICE OF MEDICINE IN RAMSEY COUNTY

JOHN M. CULLIGAN, M.D.
Saint Paul, Minnesota

FIRST of all, I wish to express my sincere gratitude to the members of the Ramsey County Medical Society for the honor conferred upon me by electing me your president for the year 1947. I have enjoyed the year tremendously and have received wholehearted support and assistance from the entire membership of the society, particularly the members of the various committees. It has been a novel and interesting experience for me, and I want you all to know that I am sincerely proud to have been able to serve as your president.

It often has been said that Ramsey County is one of the most enjoyable places to practice medicine because of the spirit of good fellowship and comraderie that exists among the members of the profession. It is my privilege as your retiring president to recall to the minds of some of the older members of the society the factors which have brought this situation about and to acquaint the new members of the heritage which is theirs. This situation is something which should not be allowed to die, as it makes for the happiness of the members of the profession and indirectly aids the quality of medicine in this community. Our new president-elect, Dr. J. Richard Aurelius, expressed succinctly this sentiment by saying, "If I could only eke out an existence practicing medicine in Saint Paul, I would prefer it to any other community even though the monetary returns were much greater elsewhere."

The Ramsey County Medical Society has been the guiding organization of the local profession now for seventy-seven years. This society as we know it today was formed on February 14, 1870, and incorporated later in that year. The purposes of the society are expressed in its constitution as follows: "Its general purposes shall be to contribute to the development and advancement of the science and art of medicine and medical education; to promote the public health; to encourage and foster a spirit of fellowship and co-operation among its members; and to maintain the ethics of the medical profession, to the end that it may enjoy the respect and support of its members and the community."

Presidential address presented to the Ramsey County Medical Society, January 26, 1948.

The first officers of the society were Dr. Daniel W. Hand, president; Dr. Alfred Wharton, vice president; Dr. William Banks, corresponding secretary; Dr. C. H. Boardman, recording secretary; and Dr. Samuel D. Flagg, treasurer.

The organization of medical societies in Minnesota had rather hectic times until the Minnesota State Medical Association was formed February 1, 1869. It was through the efforts of this association that the local county societies in the state were organized, and they have been on a satisfactory basis ever since. That is why the Ramsey County Medical Society, as we know it now, was organized February 14, 1870. Preceding this, in 1853 the Minnesota Medical Society had been formed. It was reorganized in 1856 and languished and died, the last meeting having been held in 1857 in St. Anthony, as Minneapolis was then called. The Saint Paul Academy of Medicine and Surgery was formed in 1860 and incorporated in 1861. This lasted a few years and languished possibly because of the intervention of the Civil War. The Minnesota Homeopathy Institute was formed and incorporated in 1867. The State Medical Society for Eclectic Physicians of Minnesota was formed in 1869. This lasted only a very short time. The Saint Paul School for Medical Instruction was organized in 1870 and was under the direction of Dr. Alexander Stone. This proved to be a very flourishing organization for a great many years.

The first physician to actually locate in Saint Paul for the practice of medicine was John Jay Dewey. He arrived July 15, 1847, when Minnesota was still a territory and had not been admitted to the Union as a state. Previous to this time the only physicians in Minnesota were those stationed at Fort Snelling, who sometimes rendered medical services to some of the residents of Saint Paul in addition to caring for the personnel at the army post. The first army surgeon arrived in 1821. He was Edward Purcell. He was called frequently to attend residents in and around the surrounding country. He died in 1825. He was followed by a surgeon named B. F. Harney and an assistant surgeon named Robert C. Wood in 1835. Reverend Thomas S.

Williamson, M.D., arrived to attend to the spiritual and physical welfare of the post and its environs. He remained at Fort Snelling until 1851 and performed the first marriage by a clergyman in Minnesota Territory. It is interesting to note that surgeon John Emerson, while stationed at Fort Snelling, was the owner of the celebrated negro slave, Dred Scott, whose case involving ownership went to the Supreme Court of the United States. The decision rendered by Chief Justice Roger Brook Taney was a major factor in precipitating the Civil War.

Due to the inability of the post physicians to attend the growing community, most obstetrical cases were attended by midwives who were very numerous in the community. The community was not at all times called Saint Paul. It was known by various names principally Kaposia, Pig's Eye (after Pierre Parrant), Saint Paul's Landing, Saint Paul's, and finally Saint Paul. By 1849 the number of practicing physicians in Saint Paul had increased to five. The first records of deaths were reported June 1, 1850. There were fifteen deaths reported, one individual having attained the age of eighty years. The average age of the fifteen was 20.04 years. It is certainly an excellent compliment to the efforts of the medical profession that today the life expectancy of a child born in Minnesota is sixty-four years. By 1853 ten physicians were in Saint Paul, and in 1860 twenty-seven were practicing here.

In 1853 the first hospital in Saint Paul was started. St. Joseph's Hospital under the direction of the Sisters of St. Joseph opened its doors in 1854. St. Luke's Hospital was opened in 1873 under the direction of the Episcopalian Church. However, preceding this, in 1855 the Christ Church Orphan's Home and Hospital were incorporated. This was the forerunner of the present St. Luke's Hospital. In 1882 Bethesda Hospital was opened under the direction of the Lutheran Church. They remained in their first quarters until 1932 when the present new hospital was opened to the public. In the same year, 1882, the City and County Hospital of Saint Paul was opened. This was long under the direction of Dr. Arthur B. Ancker, and following his death the hospital's name was changed to Ancker Hospital. In 1906 Midway Hospital was opened in modest quarters. Mound's Park Hospital was opened in 1907. These were both under the direction of the Baptist Church. The new Midway Hospital was opened in 1928. St. John's Hospital followed in 1910, and this was also under the direction of the Lutheran Church. In 1911 Gillette Hospital was opened. Since 1897 the crippled had been cared for at the City and County Hospital. With the opening of the Gillette Hospital, crippled children were transferred to this state-operated hospital. In 1913 West Side General Hospital was opened, and this has no direct religious affiliation. In 1920 through a gift of Charles T. Miller, the Miller Hospital was opened. In 1921 the Northern Pacific Hospital was moved from Brainerd to Saint Paul, and it has operated under the direction of the Northern Pacific Benefit Association for the welfare of the railroad's employes. In 1928, through the tireless efforts of Dr. Walter Ramsey, a large enough sum of money was subscribed by people of Saint Paul to build and endow the Children's Hospital. All through the years these institutions have served the public in rendering medical care. They have kept pace with the new developments in medicine and surgery and in all this time have rendered care second to none in the country.

In Saint Paul's medical history numerous epidemics have swept the community. In 1847 and in 1848 what was called miliary fever became very widespread and attacked mostly the young adult population. From the description of the disease, it was undoubtedly an epidemic of scarlet fever. Three epidemics of Asiatic cholera swept through Saint Paul. These were described by Dr. John Armstrong.[1] In 1847 and 1848 a few cases were reported among the arrivals on boats coming from Galena, Illinois, and New Orleans. This epidemic never became very widespread, but in 1855 an extremely widespread epidemic broke out. Every boat arriving brought new cases, as persons were becoming infected on the boats due to drinking impure water. The mortality is not known but deaths were very rapid after infection. Much fear of the epidemic existed throughout the population, and when it was decided that St. Joseph's Hospital was the best place to take care of those infected with cholera, a mass meeting was held at Timm's Grocery Store at Ninth and St. Peter Streets, and the Sisters were warned that if they brought cholera into that neighborhood the hospital would be burned. Also an indignation meeting was held on the West Side when a pest house was proposed

in that neighborhood. However, shortly after this, the epidemic subsided, to recur again in 1866 but only for a short time. The newspapers carried very little concerning the amount of cholera present in the community during these epidemics, as they were afraid it would deter the immigration of people to this thriving community. In fact, frequently the presence of cholera was denied.

In 1861 an epidemic of hydrophobia appeared. Dogs apparently infected in the southern part of the state transmitted the disease here, with the result that all dogs were ordered destroyed and the epidemic ceased.

In 1884 a smallpox epidemic developed, and widespread vaccination was promulgated. As an example to the community, all the Sisters at St. Joseph's Hospital underwent vaccination, except one Sister who hid when her turn came to be vaccinated. She contracted smallpox and was the only member of the religious community who died. On her death bed she pleaded with others not to neglect vaccination.

In 1918, 1919, and 1920, the pandemic of influenza swept the country, including Saint Paul. Practically all the hospitals in the city were turned into influenza hospitals, and the mortality was terrific. It will be interesting to note whether in the next two years an epidemic of influenza will recur, because they have occurred every thirty years for practically as long as medical records have been kept. If we are going to have a recurrence of this epidemic it should break out within the next year or two.

All during this time, typhoid fever was practically always present.

In the early years, articles by physicians in this community were published in numerous journals, principally the *Northwestern Medical and Surgical Journal,* published in Chicago; the *New York Journal of Medical and Collateral Sciences;* and the *Cincinnati Lancet and Observer.* The first medical journal to appear in Minneapolis was the *Minnesota Homeopath,* published in 1854 by George Hadfield.

From 1889 to 1913 the Ramsey County Pathological Laboratory was conducted by the Ramsey County Medical Society. This was discontinued in 1913 because of the formation of pathological laboratories in all the various hospitals.

The Ramsey County Medical Library received its start principally through the efforts of three individuals, Dr. Edouard Boeckmann, Dr. H. Longstreet Tayor and Dr. John Rothrock. The library now contains more than twenty-nine thousand volumes, and is as fine and complete a county medical library as there is in the country. The library has been supported from different sources. In 1899 it was supported by voluntary subscriptions from its members, from the proceeds from the *Saint Paul Medical Journal,* and from an appropriation from the Pathological Laboratory Committee's profits. After the discontinuance of the Pathological Laboratory, the library was supported by appropriation of society funds. The greatest financial support of the society has been derived through the benefaction of Dr. Edouard Boeckmann. He invented and developed Pyoktanin catgut which he manufactured for his own use and that of his colleagues. Through his generosity he contributed this catgut industry to the Ramsey County Medical Society, and it is still being made in the Ramsey County Society rooms on the sixteenth floor of the Lowry Medical Arts Building. Although it is not making much money now, it is at least staying out of the red. However, this business has flourished in the past, and the result of this, the Ramsey County Medical Society is undoubtedly the wealthiest county medical society in the world.

The accumulation of the so-called building fund had rather an interesting beginning. In 1901 the American Medical Association met in Saint Paul for the second time. A subscription was taken for entertainment of the visiting physicians, and after the convention there was a balance of $3,000. This was guarded by Dr. Charles Wheaton and later given to the Ramsey County Medical Society as the nucleus for a building fund. To this original fund was added profits from the *Saint Paul Medical Journal* and from the catgut industry, so that now the Ramsey County Medical Society building fund amounts to $256,051.94 which is held in bonds and stocks. The income from this amounts to $10,812.05 per year. From this income about $6,000 is contributed to the library to help maintain the acquisition of periodicals and medical books. This is augmented of course by moneys supplied from the annual dues of the members.

Also housed in the library is a museum of old instruments and medical gadgets, as well as a small number of old medical books. This was accomplished through the tireless efforts of Dr.

John Armstrong, and it was through his efforts that most of the historical data which I am presenting here to you this evening were preserved.[2]

Several noteworthy events in medical history have occurred in Saint Paul. In 1886 Dr. Justus Ohage, Sr., father of our own Justus Ohage, performed a cholecystectomy in St. Joseph's Hospital, the first ever to be performed in America. Probably the first, but at least the second, bronchoscopy was performed by Dr. Arnold Schwyzer. There is some controversy whether he or Coolidge of Boston performed the first bronchoscopy in America. Dr. Schwyzer had just returned from Europe and had brought a bronchoscope back with him. While he was unpacking the instrument, he got a call from a patient who had a bone lodged in his trachea. He performed a tracheotomy and removed the bone by means of the bronchoscope. This was in the fall of 1904. He was assisted at the operation by Dr. Fred C. Schuldt.

Our own Fred Plondke, while visiting in France in 1906, received about fifty ampules of stovaine from a French chemist and performed a large number of surgical cases under spinal anesthesia on his return home in 1906 and 1907. I believe this was the first time spinal anesthesia was ever performed in America. I do not know whether Dr. Plondke experienced any untoward results from spinal anesthesia, or whether he simply stopped using this anesthesia because he ran out of stovaine.

Another off-shoot of the Ramsey County Medical Society is the Ramsey County Medical Foundation, Inc. This foundation was founded and incorporated November 23, 1938. Every member of this society is automatically a member of the Ramsey County Medical Foundation. Its purpose is to aid indigent physicians and their families. The organization was brought about as the result of the following incident recorded as follows: "Not long ago a respected Saint Paul Physician died penniless in Ancker Hospital. The irony in this instance lay in the fact that this man had himself established an important service at Ancker Hospital. He had headed the service for many years, and it would be difficult to estimate with any accuracy, at this date, how many thousands of dollars worth of skilled medical service—his only capital and stock-in-trade—he had given, without any return whatsoever except the satisfaction of suffering relieved and a duty performed for the sick and needy of Saint Paul and Ramsey County. It is sad that during his last year, he, too, joined the throng of the stricken, but neither the city which he had served so well nor even his professional colleagues found a way to come to his aid."

That incident and some others, equally sad and equally unnecessary, led to the formation of the Ramsey County Medical Foundation, Inc. This foundation was designed expressly to receive funds from other physicians, from their friends and from organizations (both public and private) which they had served, and then to distribute the income from these funds when the need should arise. It will be distributed through the instrumentality of the foundation to just such men as the physician who died at Ancker Hospital, and many another whose practice has dwindled and whose resources are gone, or to the physician's widow or some other dependent left without means.

Many a more fortunate colleague or his wife have wished for such an institution to which they could make a bequest out of their own plenty. Many a grateful organization—recipient of medical service for which the individual physician would accept no pay—has wished for such an institution to which a gift could be made in recognition of the faithful service of its volunteer staff. Many a public institution which has received thousands of dollars worth of service from Ramsey County physicians would gladly have allotted a contribution as part of its regular budget for such a cause, if there had been a legally constituted corporation which could accept the contribution. There has been no such legally constituted body. The Ramsey County Medical Society, to which the majority of qualified physicians belong, was organized for purposes of scientific advancement and cannot accept such funds. It was clear to leaders in the society, however, that a way must be found. A committee of members was appointed to study the matter and see what, if any, instrument could be created which could receive and disburse aid for needy colleagues and their dependents. So the Ramsey County Medical Foundation came into being.

Another activity of the Ramsey County Medical Society at the present time is the development of a blood bank for the benefit of all the members of the profession and their patients. This

is being worked out with the American Red Cross, so that all types of blood and blood derivatives, such as plasma and Rh positive and negative bloods, will be available at all times. If this plan goes through, anyone can get all necessary blood for merely a nominal charge of about $3.00 if he replaces blood taken from the blood bank. Otherwise a larger fee of approximately $25 will be charged. At the present time between 500 and 600 pints of blood a month are used in Saint Paul. This no doubt would be doubled or tripled if enough blood were available.

I have tried to outline to you some of the history pertaining to the practice of medicine as it has existed here since 1820—some of the problems surmounted, some of the institutions developed, some of the activities of the society and individual members of the society who have made medical history—and I hope I have proved the point that Saint Paul has been a wonderful place to engage in the practice of medicine. That this situation still exists is in no small degree due to the remarkable degree of good fellowship, comraderie, consideration and honesty by a very high percentage of the members of the profession. To the younger members of our group, I hope it will not appear presumptuous of me to give a few words of advice.

1. Continue your medical studies, by the reading of medical literature, by attending medical meetings, by association with other physicians and by attending postgraduate courses, so as to keep abreast of medical progress.

2. Be neat and clean in appearance.

3. Be tolerant to a high degree. Remember you are dealing with human beings, and it takes all kinds of people to make a world.

4. Try to develop a mildly humorous attitude, because the physician who pleases his patient has learned much about the art of medicine.

5. Be the first to suggest consultation, particularly before the patient or relatives do, because in this way they will have greater respect for you instead of becoming doubtful or skeptical.

6. Associate yourselves with other physicians socially and professionally, particularly the older well-thought-of members of the profession, for they are frequently able to give you sound advice on how to avoid pitfalls which have beset them; and the corollary that goes with this—avoid the physician who has obtained his practice unethically.

7. Strive to co-operate with your medical confrére and never criticize your competitor and never believe what a patient tells you the other doctor says. Backbiting and slander only lead to bitterness, hard feelings and malpractice suits.

8. Associate yourself with an accredited hospital.

9. Keep the control of medicine in the hands of the profession, and do this by legislation if necessary. Do this above all if you are interested in the private practice of medicine as distinct from socialized medicine. Maintain the doctrine of free choice of physician by the patient. Do not allow the practice of medicine to be taken over by social service workers, politicians, cultists or racketeers.

Now there is one subject which I feel should be mentioned, and I do so with a little hesitancy and trepidation. That is the chasm which has threatened to widen between the general practitioner and the specialist. I feel, however, that bringing the question out into the open may result in clearing up some of the misunderstandings that have developed. Progress and change are inherent in medicine. If when I took my senior examinations in the medical school, I had answered in the light of what we now know, I would have been ignominiously flunked. So in any profession which develops greatly, certain men must of necessity perfect themselves in a limited field.

This has led to the development of specialties and specialists. The specialists have developed their own local societies and groups, and it is only recently that the general practitioners have formed a society of their own. I think it is too bad that this society of general practitioners was not organized many years ago, for I think it serves an admirable purpose. The general practitioner has just as many problems to solve and discuss as any specialist, and a forum where this can be done is advisable. However, the main cause for complaint on the part of general practitioners seems to be the fear of their exclusion from the hospitals. In 1946 Dr. O. J. Campbell,[3] then president of the Hennepin County Medical Society, canvassed all the Minneapolis hospitals, and this year I interrogated representatives of all the hospitals in Saint Paul, and I can say definitely that there is no inclination on the part of any of the authorities in the Twin Cities' hospitals

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BRAIN TUMORS IN CHILDREN

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THERE have been numerous reports in the literature concerning brain tumors. Except for those of Bailey et al,[1] Ford,[7] Globus et al,[9] and Zülch,[16] few of them have been limited to the tumors occurring during childhood. This fact is surprising, inasmuch as the frequency, the type of tumor, the location and the clinical course in the two age groups, childhood and adulthood, are not at all similar.

Recently, all brain tumors occurring in children of sixteen years of age and younger which were seen at the University Hospitals from June, 1931, to July 1, 1946, have been reviewed. During this fifteen-year period, a diagnosis of brain tumor was made on 202 children. Because of lack of information concerning the clinical course, thirty-one of them are not included in this report. Another twenty-five cases are excluded because of lack of histological verification of the diagnosis. The remaining 146, then, represent only the histologically verified tumors in children in whom complete clinical data are available. In this report, the frequency, location, and histological types of the brain tumors seen in these 146 children will be discussed first, after which the symptomatology and roentgenography will be reported.

Frequency.—There were 819 verified brain tumors during this same fifteen-year period at the University Hospitals. Therefore, 17.8 per cent of all brain tumors seen at this institution occurred in children under sixteen years of age. One per cent of all patients admitted to the pediatric service had a verified brain tumor. Of the 146 tumors occurring in children, seventy-nine occurred in males and sixty-seven in females.

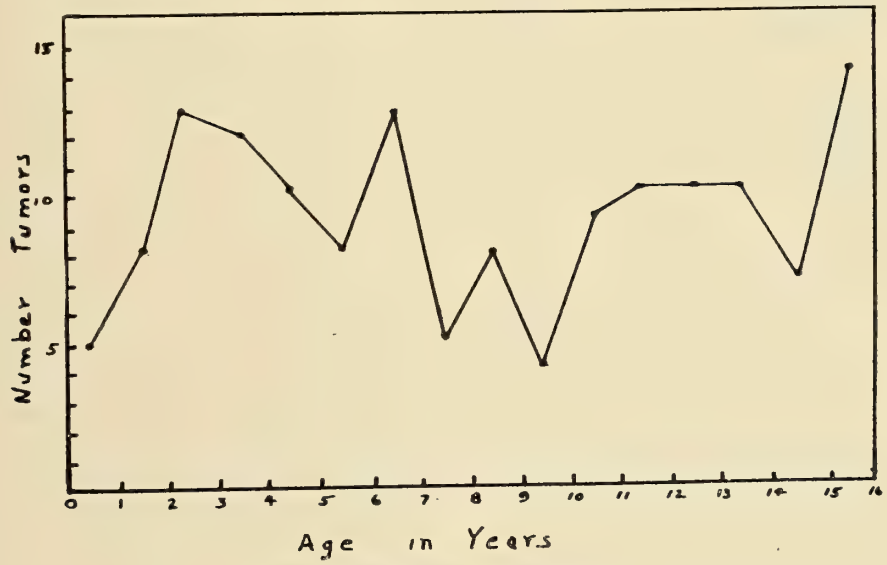


Fig. 1. Age frequency in brain tumors.

There has been considerable discussion concerning the age distribution of the various types of tumors in childhood. Bailey et al[1] and Critchley[3] found the greatest number to occur between the fifth and seventh years of life and attributed this frequency to the preponderence of medulloblastomas in this age group. However, Marburg[11] and Globus[9] found the greatest number to occur before the sixth or after the thirteenth year of life. Figure 1 shows the incidence of tumors in the various age groups in this series. There is a peak incidence at the age of two years which is due to the frequency of ependymomas at this age. It is probable that in a larger series one would

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find that brain tumors occur with equal frequency at all ages throughout childhood.

hypophyseal lesions. The more equal distribution of tumors in childhood on each side of the tentorium as found in this series and by other investigators is therefore more representative of the true frequency of their incidence than the ratio in Cushing's material.

TABLE I. LOCATION OF BRAIN TUMORS IN CHILDREN

	Subtentorial			Supratentorial							
	Vermis and Fourth Ventricel	Hemisphere	Pons and Medulla	Pineal	Hypophysis	Third Ventricle	Frontal	Parietal	Occipital	Temporal	Totals
Neuroma			1								1
Meningioma		1	1		1		1	2		1	7
Astrocytoma	10	17	6			6		2		2	43
Astroblastoma						1	2	1			4
Glioblastoma			3					2		1	6
Oligodendroglioma									1		1
Spongioblastoma		1			1	3					5
Medulloblastoma	12										12
Ependymoma	9	1				4		7	2	1	24
Pinealoma				5							5
Ganglioneuroma			1								1
Angioma		1	2			1	1	2			7
Angioblastoma	1	1									2
Cholesteatoma					3						3
Teratoma								1			1
Craniopharyngioma					4						4
Tuberculoma		5							1		6
Metastatic						1	4 (multiple)				5
Cyst				1							1
Fibroblastoma							1				1
Sarcoma	1	1									2
Total	33	28	14	6	9	16	9	17	4	5	141

TABLE II. PATHOLOGIC CLASSIFICATION

Tumor Type	Number	Number	Percentage
Tumors of Nerves		1	0.7
Tumors of Meninges		7	4.8
Tumors of Neuroepithelium		101	69.1
Astrocytoma	43		
Astroblastoma	4		
Glioblastoma multiforme	6		
Oligodendroglioma	1		
Spongioblastoma polare	5		
Medulloblastoma	12		
Ependymoma	19		
Ependymoblastoma	5		
Pinealoma	5		
Ganglioneuroma	1		
Tumors of Vascular Tissue		9	6.1
Angioma	7		
Angioblastoma	2		
Tumors of Mixed Tissue		4	2.8
Cholesteatoma	3		
Teratoma	1		
Tumors of the Hypophyseal Region		4	2.8
Granulomas		6	4.1
Metastatic Tumors		10	6.8
Miscellaneous Type Tumors		4	2.8
Total		146	100.0

Location.—In this series of 146 brain tumors, seventy-one were located above the tentorium and seventy-five below the tentorium. Cushing stated that the relation between supratentorial and infratentorial tumors in children was 2:1. However, there apparently was a selective factor in his material which brought to him a large number of

Table I reveals the location and the histological type of the brain tumors in this series. In the supratentorial region the most frequent site was the third ventricle and areas adjacent to it. The predominant tumor types in this region were astrocytomas, ependymomas, and spongioblastomas. The parietal region was the next most frequent site, and here the ependymomas were the predominant tumor type. In the subtentorial region, midline tumors were most frequent. The medulloblastomas occurred only in this region. In the cerebellar hemispheres the astrocytoma was by far the most frequent tumor. In the pontine region there were predominantly astrocytomas but also a few glioblastomas and other types.

Histological Types.—All the material available for histological examination was reviewed. Special stains were used when needed to verify a specific tumor type. Table II reveals the relative frequency of the various tumor types.

Tumors of Nerves.—There was only one patient with an intracranial neuroma in this series, and she was a fifteen-year-old girl who had bilateral acoustic neuromas that were a part of a generalized neurofibromatosis. During childhood, tumors of the nerves are exceedingly infrequent. When they do occur, they are part of a generalized neurofibromatosis and, therefore, associated with other stigmata of that disease.

Tumors of Meninges.—The origin and cellular characteristics of meningiomas has been the subject of controversy. In this series there were seven children with meningiomas. There were two lipomatous, two psammomatous, one angioblastic, one sarcomatous, and one meningiothelial type. These meningiomas were located supratentorially in five patients and subtentorially in two patients. In three patients there were multiple tumors. The duration of symptoms preoperatively varied from two days in the sarcomatous meningioma to ten years in the case of the lipomatous type.

A definite impression obtained from reviewing these meningiomas in children is that they differ greatly from those of adults with regard to type, duration of symptoms, amenability to surgery, and postoperative course. All terminated fatally within a month, except one who survived four and one-half years, but during that time he had repeated severe generalized convulsions. Whereas meningiomas in adults are one of the more favorable types of brain tumor in regard to prognosis, in children they are apt to be inoperable because of their frequent malignant histological character and the tendency for multiple sites of origin to occur, especially in the case of the lipomatous, angioblastic, and sarcomatous types.

Tumors of Neuroepithelium.—In children, as compared to adults, there is a relative preponderance of glial tissue tumors. This is due to the infrequency, in children, of neuromas and meningial tumors. In this series, 101 (69.1 per cent) of the tumors arose from glial elements.

The astrocytomas comprised the largest subdivision (42 per cent) of the glial tissue tumors. The prognosis in the astrocytoma group was excellent, especially for those located in the cerebellar region. When so located, total surgical excision was accomplished in over 50 per cent of them, and in the remaining a long survival was frequent.

The next largest subdivision (22 per cent) was composed of tumors arising from the ependymal or subependymal tissues. The prognosis in the slow-growing, well-defined papillomas and myxopapillary type of ependymoma was good. However, the rapid-growing, diffuse, cellular ependymomas and ependymoblastomas could seldom, if ever, be totally excised surgically.

The medulloblastomas comprised the third largest subdivision (11 per cent) of the glial tumors. Medulloblastomas arise in the cerebellar vermis and extend into the fourth ventricle. Proper treatment is wide surgical excision of the tumor followed by deep roentgen irradiation. The prognosis for prolonged survival of a patient with a medulloblastoma is poor.

The remaining types of neuroepithelial tumors were seldom encountered. Prognosis in all of them was poor unless they were located in readily accessible regions. The one exception was the pinealomas, for in them good results were obtained with deep roentgen irradiation.

Tumors of Vascular Tissue.—Tumors of vascular tissue are divided into: (1) those comprised of adult vascular elements, and (2) those comprised of embryonic vascular elements (Noran[13]). In the former class are grouped the cerebral telangiectases and the angiomas, whereas in the latter are grouped the angioblastomas.

In this series there were nine children with tumors composed mainly of vascular elements. Seven of the nine were of the parenchymal angiomatous type, and two were of the angioblastic type. The angiomatous lesions were amenable to surgery, except for three located in the hypothalamic region and brain stem. Both angioblastic lesions were in the cerebellum and were amenable to surgery.

Tumors of Mixed Tissue.—Tumors of mixed tissue are now generally accepted as arising from embryonic rests. They are classified into three types, depending upon the number of germ layers present. The epidermoid is composed of elements of but one germ layer, the ectoderm. The dermoid is composed of elements of two germ layers, the ectoderm and mesoderm. The teratoma is composed of elements representing all three germ layers.

In this series there were three patients with epidermoid tumors and one with a teratoma. The epidermoids were located in the suprasellar region and the teratoma in the corpus callosum. Total surgical removal was not accomplished in any of these tumors. When they are located in more accessible regions, a cure can be accomplished by total surgical excision.

Tumors of the Hypophyseal Region.—The two types occurring exclusively in the hypophyseal region are the pituitary adenomas and the craniopharyngiomas. The former are seldom, if ever, symptomatic during childhood; the latter is a frequently seen tumor type. In this series there were three craniopharyngiomas. Removal of all the tumor could not be accomplished in any of them because the lesion in all was adherent to the hypothalamic region.

Granulomas.—The granulomas include the tuberculomas and gummas. In this series there were no gummas, but there were six patients with tuberculomas. The tuberculoma was solitary in only three of these patients. In all six patients there were tuberculomas in the cerebellum and two had additional cerebral tuberculomas. Suboccipital decompression and treatment of the general systemic disease was the therapy of choice.

Metastatic Tumors.—The metastatic intracranial neoplasms are as frequent in children as in adults. In this series there were ten patients (7 per cent) with metastatic tumors. In all of them the metastatic lesion was located supratentorially. Multiple lesions were present in five patients. The primary tumor was carcinoma of the kidney in three, neurocytoma of the adrenal in two, neuroepithelioma of the orbit in two, leukemia in two, and sarcoma of the orbit in one. All the patients expired within five months after onset of symptoms.

Summary.—One in every 100 children admitted to the pediatric service of the University Hospitals has a verified brain tumor.

In children there is an equal frequency between brain tumors located above and below the tentorium.

Brain tumors occur with about equal frequency in each year of the first fifteen years of life.

Tumors of the cranial nerves are infrequent in children. When they do occur, they are apt to be multiple and part of a generalized neurofibromatosis.

Meningiomas in children are usually of a malignant histological character. Compared to meningiomas in adults, the prognosis is poor.

Astrocytomas in children are often localized tumors, of which total surgical excision can frequently be accomplished.

Ependymal tumors vary from the slow-growing papillomas of the choroid plexus with an excellent prognosis to the rapid-growing ependymoblastomas with a very poor prognosis.

Metastatic brain tumors are equally as frequent in children as in adults.

Symptomatology

There are certain fairly constant symptoms that occur in children with brain tumors which lead one to suspect this diagnosis. There are other symptoms which not only indicate the presence of an intracranial tumor but assist in localization. In this report, the frequency and significance of various symptoms and signs caused by such tumors will be summarized.

General Symptomatology.—A change in the patient's personality was the earliest symptom in 20 per cent of the 146 children in this series, and occurred some time during the course of the disease in 40 per cent of them. The frequency of this change was no greater in the children with supratentorial than in those with subtentorial tumors. The children initially would lose interest in playing with other children, then would become so withdrawn that they ceased to play. They would fail to manifest interest in food; they would prefer to "go lie down" than play or eat. Some children became restless, more irritable, and cried or complained readily.

Symptoms caused by a generalized increased intracranial pressure were usually the next indication of the existence of a brain tumor. A headache, usually mild at first and located over the eyes and forehead, occurred in 71 per cent of the patients in this series. Pressure by the tumor on the falx, tentorium cerebelli, meninges or blood vessels, which are innervated by the trigeminal nerve, causes pain to be referred to the region of the cutaneous distribution of this nerve. The headache, which was usually accompanied by vomiting, frequently occurred in the morning after

the child had arisen from bed, and was considered to be due to the change in dynamics of the blood pressure and the cerebrospinal fluid pressure. Following the vomiting, the headache was usually relieved. The headaches were occasionally localized over the occipital and posterior cervical region. Headache so located is due to irritation of the posterior roots of the cervical nerves which supply the dura in the region of the foramen magnum. Tension on the dura in this region causes pain which is referred to the occipital region. Anything that increases the intracranial pressure, such as coughing, sneezing, or straining, may initiate the headaches, vomiting, and occipital pains. Nausea was an unusual complaint. Patients may lose weight because of the anorexia and vomiting. In three of the patients in this series the vomiting was associated with abdominal pain, and this combination of symptoms simulated appendicitis.

Increasing circumference of the head, bulging fontanelles, palpable widening of the sutures, and dilated scalp veins were clear but late indications of increased intracranial pressure. Likewise, a decrease in visual acuity was a late symptom. Decreased vision was due to one of the four following conditions: (1) papilledema, (2) diplopia, (3) primary optic atrophy, or (4) visual field defects.

There was a certain intermittency of all these symptoms especially in the children under eight years of age. This is considered to be due to the intermittent relief of the increased intracranial pressure from the progressive widening of the cranial sutures.

General Signs of Brain Tumors.—Examination of the children with brain tumors in this series revealed, early in the course of the illness, only signs of increased intracranial pressure. The most frequent evidence of such pressure was papilledema. Other evidence of increased pressure was dilation of the veins over the frontal and occipital regions, widening of the cranial sutures, bulging of the fontanelles, and increased head circumference. Extraocular palsies, especially involvement of the sixth cranial nerve, were occasionally present. Roentgenological evidence of increased intracranial pressure was present in 80 per cent of these patients with intracranial tumors.

The presence of congenital deformities such as multiple cutaneous areas of pigmentation, absence of the roof of the orbit, or asymetrical physical development, when present, should cause one to suspect an associated intracranial tumor.

Localizing Symptoms.—Symptoms that are not primarily due to increased intracranial pressure are ataxia, paresis of the extremities, convulsive seizures, polyuria and polydipsia, and abnormal body development.

Ataxia involving primarily the legs or trunk, and manifested by unsteady gait and a positive Rhomberg sign, was present in 60 per cent of the patients with cerebellar lesions. It was much less frequent in patients with tumors in other regions, and for this reason these symptoms are useful in differentiating tumors in these locations.

Paresis of an extremity was found in only 3 per cent of the patients with tumors located in the cerebellum but was present in 40 per cent of those with tumors located in the cerebrum.

Convulsive seizures occured in 16 per cent of the patients in this series. These were either generalized attacks, localized (Jacksonian) seizures, or cerebellar fits. Jacksonian seizures occurred in four patients, and all four had parietal lobe tumors. Generalized convulsive seizures occurred in twenty-five patients; twenty-three of these had cerebral and two had cerebellar tumors. The presence of Jacksonian or generalized convulsive seizures in a patient with a brain tumor was a reasonably accurate indication of a cerebral localization. There were only two patients with cerebellar type seizures, and in both the attacks were very mild. However, these attacks may be severe and accompanied by cyanosis, respiratory irregularities, and unconsciousness.

Polyuria and polydipsia occurred only in patients with tumors so placed that they could exert pressure on, or infiltrate directly into, the hypothalamic nuclei. This occurred in two patients with pineal tumors, four patients with tumors in the hypothalamic region, and one patient with a tumor in the third ventricle. There was evidence of a Froelich-type dystrophy in one patient with a pineal tumor and in two patients with tumors in the region of the third ventricle.

Localizing Signs.—Signs that are of localizing value are cranial nerve palsies, visual field defects, inco-ordination of the extremities, reflex changes,

nystagmus, restricted upward gaze, and stiff neck.

Cranial nerve palsies occurred in 32 per cent of the patients in this series. Cranial nerve palsies can be divided for diagnostic purposes into three groups: (1) involvement of the nerves supplying the extraocular muscles, due to increased intracranial pressure, and hence, without localizing value; (2) involvement of only the eighth cranial nerve, indicating a neuroma of this nerve; (3) involvement of one of the last six (other than the eighth) cranial nerves, suggestive of a tumor located in the brain stem.

Visual field defects were present only in patients who had a lesion along the optic pathway. A field defect associated with a primary optic atrophy indicated a lesion near the optic chiasm. If the field defect was associated with motor dysfunction, the lesion was in either the temporal or temporal-occipital region.

Inability to perform co-ordinated movements of the extremities occurred predominately in cerebellar tumors. There was no difference between the frequency of incoordination in the patients with midline or laterally placed cerebellar lesions.

Reflex abnormalities were more frequently present in supratentorial (64 per cent) than in subtentorial (21 per cent) tumors. When reflex abnormalities were present in patients with supratentorial tumors, the reflexes were hyperactive and the Babinski sign positive. Cerebellar tumors produced hypoactive reflexes, except when there was pressure on, or direct infiltration of, the brain stem by the tumor, in which case the reflexes sometimes were hyperactive. Such involvement of the brain stem was unusual but occurred with sufficient frequency so that the presence of hyperactive reflexes did not positively exclude a subtentorial lesion.

Nystagmus was present in 46 per cent of the patients with cerebellar tumors. It was also frequently observed in patients with brain stem (48 per cent) and pineal tumors (50 per cent), but was very infrequent in cerebral tumors (14 per cent). Nystagmus, when present, can be interpreted as suggestive of a cerebellar, pineal, or brain stem tumor. Cranial nerve palsies occurred frequently with brain stem tumors but seldom with cerebellar tumors.

Restricted upward gaze was present in 80 per cent of the patients with tumors of the pineal gland. It was present only in these patients and was due to involvement of the superior collicular region.

Stiff neck and pain in the posterior cervical region are included with the localizing signs, because in this series they occurred only in patients with cerebellar and pineal tumors. Fifty per cent of the patients with pineal and 36 per cent of the patients with cerebellar tumors had a stiff neck when first seen in this clinic. Both stiff neck and posterior cervical pains are manifestations resulting from reflex spasm of the muscles due to irritation of the cervical nerves by herniation of the cerebellar tonsils and due to irritation of the dura around the foramen magnum, which is supplied by sensory branches from these nerves.

Summary.—The neurological symptoms and signs produced in children by a brain tumor are of two types: (1) nonlocalizing manifestations due to increased intracranial pressure, (2) localizing manifestations due to direct involvement of the brain tissue by the tumor.

Brain tumors in children are not uncommonly associated with congenital developmental defects, such as multiple neurofibromatosis and telangiectases.

Roentgenography

Roentgenography of the skull is a routine procedure in the investigation for an intracranial neoplasm. The value of such an examination is as great in children as in adults. In this report, the abnormalities suggestive of brain tumors, seen in skull roentgenograms of 123 of the children in this series, will be reviewed, and an attempt will be made to show how roentgenography may be of aid in arriving at a correct diagnosis in such patients. Twenty-three of the 146 cases are excluded because of insufficient or inconclusive data.

Roentgenograms taken in the lateral, posterior-anterior, and occipital positions were routine. Stereoscopic views were obtained whenever it was thought that they would provide additional information. Ventriculograms were performed whenever the existence or localization of a brain tumor was in doubt.

Increased Intracranial Pressure.—Three abnormalities frequently observed in patients with increased intracranial pressure are: (1) widening of the cranial sutures, (2) increased convolutional (digital) markings, and (3) erosion of the sella.

Roentgenograms should not be considered indicative of increased intracranial pressure unless at least two of these abnormalities are present. Ninety-nine of the 123 patients had roentgenologic evidence of increased pressure. In children under five years of age, increased pressure was frequently accompanied by widening of the cranial sutures. In children over ten years of age, widening of the more firmly united sutures was less frequent, but erosion of the sella was often seen (Table III).

TABLE III. ROENTGENOGRAPHIC ABNORMALITIES ACCORDING TO AGE OF PATIENT

Age in Years	Number X-rayed	No. With Roentgenographic Evidence of Pressure		Roentgenological Evidence of Pressure					
				Widening of Sutures		Increased Convolution Markings		Erosion of Sella	
		No.	%	No.	%	No.	%	No.	%
0— 5	39	33	85	21	64	18	59	9	27
6—10	37	30	81	18	60	15	50	14	47
11—15	47	36	76	16	44	21	58	19	52
Total	123	99	80	55	55	54	54	42	42

Local erosion of that portion of the calvarium immediately overlying the tumor was also encountered in this series of patients. This abnormality is due to local pressure of the tumor and should not be confused with the erosion of generalized increased convolutional markings which is due to a generalized increase in intracranial pressure. The erosion here referred to appeared discrete and localized. This type of erosion occurred in four patients, and in all of these it occurred at a point overlying the tumor. Thus, such an erosion is an accurate indication of the location of the tumor.

Pineal Shift.—In 1925 Naffziger[12] reported that a shift in the position of the pineal gland may be of great value in localizing brain tumors. However, the pineal gland is seldom calcified until late in childhood and so this method is of less value in children than in older individuals.

Dyke[5] in 1930, Fray[8] in 1938, Dyke and Davidoff[6] in 1940, and Hawes and Mead[10] in 1943 reported that a posterior displacement of the pineal gland may occur in patients with subtentorial tumors. This is just the reverse of the more frequently seen upward shift (Vastine and Kinney[15]) and is believed to be due to an internal hydrocephalus resulting from a small obstructing subtentorial lesion. However, any shift in the pineal gland is unusual in subtentorial tumors, and it was observed in no case in this series.

Intracranial Calcification.—The presence of calcification visible on microscopic examination in a tumor was first described by Rokitansky and Virchow. Since their original description, the presence of calcium in these tumors has become well recognized. In 1925, van Dessel[4] reviewed the incidence of calcification in gliomas and concluded that calcification was the result of degeneration of hyaline in the walls of the vessels. He noted an increased frequency of calcification in tumors of older people as compared with tumors in younger individuals. He also concluded that it could occur in any slow-growing tumor. However, there are several reports in the literature of calcification occurring in very young children and also in rapidly growing tumors (Boldrey and Miller[2]). There was evidence of abnormal intracranial calcification in twenty-five patients in this series, and in every case in which intracerebral calcification was seen it was found to be within the tumor. Thus, the presence of intracerebral calcification in a patient suspected of having a brain tumor is not only excellent evidence that such a lesion is present, but also the calcium indicates accurately the site of the lesion. Table IV reveals the types of tumors in which calcification occurred in amounts sufficient to be visible in roentgenograms. Some assistance in differential diagnosis can also be obtained from the appearance and the location of the calcification. Suprasellar calcification that seemed to outline a cystic cavity was either a craniopharyngioma or a cholesteatoma. Stippled areas of calcification in the occipital or temporal regions were most likely to be oligodendroglioma, ependymoma, or astrocytoma. Calcification that appeared to outline the cerebral convolutions indicated the presence of an angioma.

Skull Metastasis.—Skull defects due to invasion of the skull by metastatic tumors were visualized in two patients. A tumor in young children which is characterized by metastasis primarily to the skull is the Hutchinson-type neuroblastoma of the adrenal gland. The skull metastasis in this series were from that type of tumor (Table IV).

TABLE IV. LOCALIZING ROENTGENOLOGICAL EVIDENCE OF BRAIN TUMORS IN CHILDREN

Type of Tumor	Calcification	Local Erosion	Metastasis
	No.	No.	No.
Meningioma	2	1	
Astrocytoma	5	2	
Angioma	2	1	
Ependymoma	5		
Cholesteatoma	3		
Craniopharyngioma	3		
Spongioblastoma	1		
Pinealoma	1		
Oligodendroglioma	1		
Astroblastoma	1		
Tuberculoma	1		
Adrenal neuroblastoma			2
Total	25 20.3%	4 3.2%	2 1.6%

Ventriculography.—Ventriculograms were performed in thirty-eight of the 123 patients and were of value in localizing the lesion in twenty-nine of them. In seven patients the ventriculogram was of no diagnostic value. In four of these seven patients, insufficient air was injected, and in the other three there was no abnormality recognized in the ventriculogram even though the ventricular system was well visualized. Poppen and Peacher[14] recently have reported ten cases of verified supratentorial tumors with normal air studies.

Ventriculography was not only of value in determining the presence and localization of the lesion but also was of assistance in judging the operability of the tumor. In this series it was decided that the lesion was inoperable, because of the roentgenographic appearances, in only one patient. This was an extremely diffuse astrocytoma located around the third ventricle. In four patients there was an upward displacement of the posterior horn of the lateral ventricle on one side. This is an unusual defect and was correctly interpreted in all four as significant of a posterior fossa lesion.

Encephalography.—It is inadvisable to perform an encephalogram on a patient with a brain tumor, but sometimes a brain tumor is present but not suspected prior to performing an encephalogram. This is especially true in children because of the frequency of vague neurological signs and symptoms.

In this series, encephalograms were made on eleven of the 123 children. In six of the eleven patients the tumor was demonstrated to be present. In the remaining five patients the air studies were noncontributory. They were noncontributory in two because insufficient air entered the ventricles to outline them well, and in three there was no air in the ventricular system whatsoever.

Summary.—Roentgenograms of the skull revealed evidence of increased intracranial pressure in 80 per cent of children with brain tumors.

Abnormal intracranial calcification was visible in roentgenograms in 20 per cent of children with brain tumors and was an accurate indication of the localization of the tumor.

Ventriculograms were of localizing value in 78 per cent of the children with brain tumors in whom such studies were performed.

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AUTOMATIC ATTENTIVE BREATHING IN ANGINA PECTORIS

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IT WAS in August of 1924 that P. C., aged fifty-four, emphasized the relief he had obtained one day from a severe attack of angina pectoris, when his attention was suddenly diverted to a bird singing on a treetop nearby. At that time this patient had had frequent attacks of chest tightness and chest pain for eight months. He volunteered information further that after that experience he found he could abort an attack at will or shorten one by actively pretending that he was "listening to a bird sing on a treetop," providing he promptly stopped whatever he happened to be doing at the moment and turned his attention to his breathing, while he endeavored to keep himself fully at ease and relaxed. As he demonstrated it to me, his technique consisted in a slowed-up and protracted inhalation, with his chest expanding very slowly during inhalation. His exhalation was slow also, and there was a definite pause between each phase of his respiration. He paid special attention, he informed me, to maintain the chest muscles and his arms relaxed.

I have since modified that technique. I teach diaphragmatic breathing with attention to both phases of respiration and the intervening pauses. In addition, I have added at least one breathing exercise that I prefer to call obstacle breathing. It is done by alternately closing one nostril while inhaling slowly through the other. In so doing, one seems to improve the diaphragmatic type of breathing.

I encouraged this patient to continue this practice because he thought it helped him, but I did not comprehend the significance of it for several years, even though in December, 1927, P. Yogananda[27] called my attention to the values of attentive breathing. Later, circumstances, a search through the literature on respiration and a careful analysis of the physiological factors involved in the act of "listening to a bird," as demonstrated to me by P. C. on several occasions, finally convinced me that "attentive respiration" may be a valuable exercise in some heart ailments, and should be investigated for its potentialities. Hence, I am reporting on eleven cases carefully observed for long periods, in which I considered that breathing exercises were of definite value although I did not consider my controls fully adequate. It was not possible to make my patients quit the respiratory exercises that they learned and which they felt gave them relief in times of distress. After they mastered attentive breathing, it gradually became automatic with them, and they would automatically turn to those exercises at the first approach of any sign of distress. My only control was to keep each patient under observation for at least four weeks or more, on medication, rest and sedatives, before teaching the automatic attentive breathing exercises. However, I am offering this for what it may be worth, and so that others may try it.

Case Reports

Case 1.—P. C., mentioned above, was fifty-three years of age when he had an attack of coronary thrombosis in the fall of 1923 and was confined to his home for over one month. He came to my office the first time in July, 1924, with the chief complaint of frequent attacks of sudden severe pain in his heart area radiating to his left arm. All of his physical findings, as well as blood studies, blood Wassermann test and urinalysis, were negative. The electrocardiographic findings were indicative of myocardial damage on the basis of coronary disease. A diagnosis of coronary disease with angina pectoris was established, which was later confirmed at the Mayo clinic. The patient was a railroad passenger locomotive engineer. He was given the usual medical care, including 1/100 gr. nitroglycerine tablets for sublingual use which he required to obtain relief from symptoms about three or four times a day. However, a few weeks after his accidental discovery of "listening to a bird," and subsequent repeated use of this respiratory technique, he no longer required any drug therapy.

The railroad company did not allow him to work on a passenger locomotive after his first attack, because of the possible risk to lives of passengers, but he worked on freight engines in the roundhouse until his retirement, because of his age, when he became seventy years old. Thus he worked at a harder job for those sixteen years following the initial attack. He died on October 6, 1947, from a cerebral hemorrhage at the age of seventy-seven years. He was in good condition as far as his cardiac ailment was concerned up to the date of his sudden death.

Case 2.—H. R., at the age of thirty-one, had noticed chest pressure and pain after exertion. This became progressively worse and often radiated to either arm

or both arms. His attending physician found hypertension and left heart enlargement. He recommended a vacation, sedatives and nitroglycerine, and later a reduced work schedule.

one year later. He had been taking sedatives regularly and nitroglycerine sublingually, two to four times nearly every day, for about two years before calling on me. Any exertion or a rapid stride in his walking would

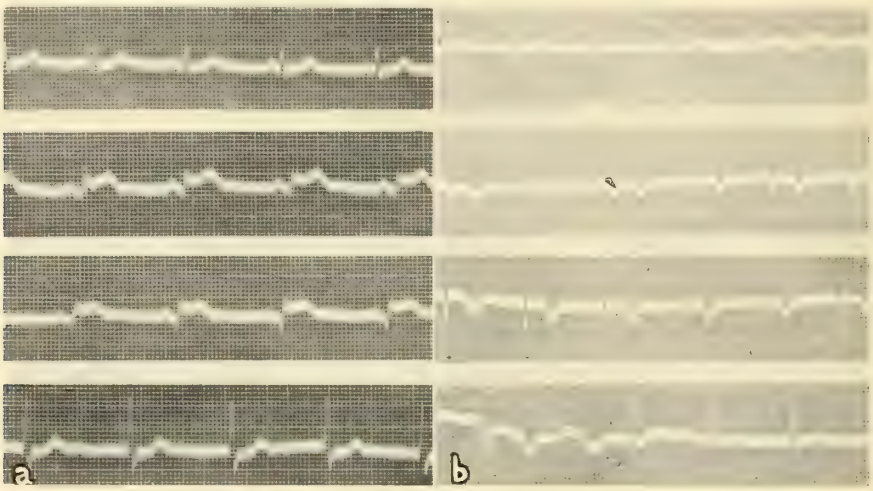


Fig. 1a (Case 4). Electrocardiogram taken at onset, showing a split QRS complex in lead II, a deep Q wave in lead III, an elevated ST interval in leads II and III, and a depressed ST intervals in lead IV.

Fig. 1b (Case 4). Electrocardiogram taken two months later showing different abnormal tracing.

This patient came to me in September, 1926, one year after his first attack but still having symptoms. His physical examination was essentially negative except for a rigid and malformed right elbow which he had fractured at the age of eleven. His blood studies, the blood Wassermann test and urinalysis were all negative. His 6-foot chest plate showed a left-sided hypertrophy of the hypertensive type. His blood pressure varied between 190 and 174 millimeters of mercury systolic, and the diastolic remained constantly at 108 millimeters of mercury. His pulse varied between 76 and 84 per minute. His basal metabolic rate was + 3.

One day, this patient called soon after P. C. (reported above) had left my office. Because of the recent experience with P. C., it occured to me that I might try to teach H. R. attentive respiration exercises. Of course, I did not discontinue any of his medications. He always carried nitroglycerine tablets for sublingual use, and he had used them occasionally. He noted gradual improvement of symptoms over the next twelve months' period, and during the following year he discontinued all drug therapy. He has been free from chest pains now for over eighteen years. I see him frequently, and I consider him as being fully relieved of his symptoms. He is carrying on his vocation with full responsibilities. He still has his hypertension, usually 170/100. His electrocardiogram has always been normal, and it is normal now.

Case 3.—G. T., a retired minister, aged sixty-seven, came to me in October, 1937. He gave a history of having had an acute attack of coronary thrombosis three years previously and another attack of lesser severity bring on chest tightness and pain. A diagnosis of angina pectoris and coronary disease was made. After he was under my care for ten weeks, he too was taught breathing exercises. He continued with other medications as before. He called on me about once a week at first and later less often. It is now nearly ten years since he has taken any medication at all, and he states that he has "forgotten whether he has a heart or not." The improvement in this case also came on gradually, so that I was not aroused enough to attribute seriously the improvement in his cardiac trouble to respiratory exercises. However, later cases observed more carefully and a search through the literature have caused me to think that there could be respiratory techniques or exercises for easing cardiac distress.

Case 4.—On August 1, 1943, A. F., aged fifty-three, became suddenly very ill. He was apparently well up to the moment of his sudden attack. While he was listening to the radio newscast at 8:00 a.m. that the American troops were landing on one of the Aleutian Islands, he suddenly became aware of severe pain at the left of the upper end of his sternum. This became progressively worse. Within a few minutes he was covered with profuse perspiration and became ashen grey in color. He was given a hypodermic injection of ¼ grain of morphine which only relieved him partially. He was put to bed promptly. At 10:00 a.m. he took ¼ grain of morphine by mouth, and at 1:00 p.m. he was given papaverin hydrochloride, 3 grains intravenously. He ran an elevated temperature of about 101.4° for five days. His sedimentation rate was 26 mm. in sixty minutes. His leukocyte count was 14,000. His electrocardiogram showed myocardial damage (Fig. 1).

He was confined to bed for over six weeks. The consultant cardiologist at first thought that his prognosis was rather poor. The diagnosis was coronary thrombosis with myocardial damage.

quality, and no thrill, murmur or friction rub was elicited. The blood pressure was 136/82.

On the mere suspicion of a possible heart involvement, this patient was kept in bed for a few days. On

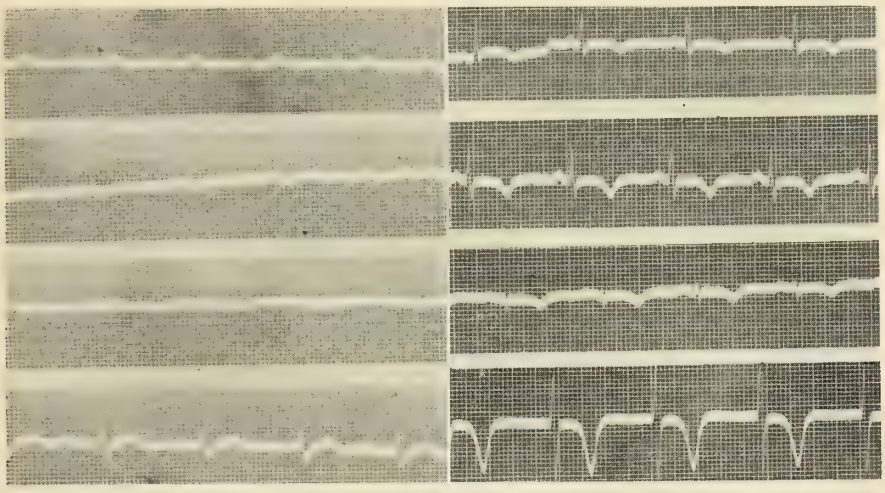


Fig. 2 (Case 5). Electrocardiogram taken in June, 1946, interpreted as within normal limits except for showing a low potential in all leads.

Fig. 3 (Case 5). Electrocardiogram taken six months later showing negative T waves in all leads, not present in Figure 2 and indicating considerable myocardial damage.

This patient was given morphine when he needed it the first five days. He took aminophylline, 3 grains three times a day, for about a month. This patient could not turn on his left side for a long time after his acute attack. He claimed that he became aware of palpitation and the heart would skip a beat now and then if he turned on his left side. He was left rather weakened, and could not do much at first in the early weeks of his recovery without bringing on some tightness and pain in his chest. He could not walk his usual gait without causing chest tightness and pain. He was taught attentive breathing exercises on the tenth week of his ailment. He volunteered the information shortly afterwards that turning his attention to "proper breathing" soon removed his chest pain. To date, this patient is back to his full duties, although he restricts his activities somewhat as a precautionary measure. He attributes his well being to the practice of "attentive breathing" a few short moments several times each day.

Case 5.—R. K., a housewife, aged thirty-eight, had her first attack of chest tightness and pain on June 8, 1946, when she suddenly felt severe pains in her left upper chest, which lasted over a half hour. By the time I saw her at her home, the pains had eased considerably and she felt rather tired out. A physical examination at the bedside did not reveal anything unusual. Her temperature, pulse and respiration were normal. The pulse rate was 80 and of good quality. The physical examination was essentially negative. The lung examination revealed normal breath sounds throughout the chest. No areas of dullness and no râles were found. The heart tones were of good

June 28, 1946, she came into the office. Her physical findings were the same except that the blood pressure was 150/100, the hemoglobin was 75 per cent, the red blood cell count was 3,750,000, the leukocyte count was 11,200 and the sedimentation rate was 20 mm. in sixty minutes. The electrocardiogram (Fig. 2) revealed a low potential in all leads but otherwise was interpreted as within normal limits. On November 12, 1945, she came in complaining of pain in the stomach that came on at irregular intervals, and she stated that often if the pain lasted a while, it would then radiate to her chest, producing a tightness around the heart and some difficulty in breathing. X-ray studies of the gastrointestinal tract, including a barium enema of the colon, proved to be negative. A 6-foot chest plate revealed normal heart and lung shadows. The blood examination revealed a sedimentation rate of 35 mm. in sixty minutes. Her hemoglobin was 82 per cent, red blood cell count was 4,100,000 and leukocyte count was 9,550.

This patient went to Florida in December, and on her return trip she had another attack of severe chest pain in a hotel lobby, for which she was given a hypodermic injection by a physician.

On January 8, 1947, she came in complaining of frequent feelings of chest tightness, some pain and dyspnea on exertion. The electrocardiogram now (Fig. 3) showed a negative T wave in all leads, evidently indicative of considerable myocardial damage. This patient was kept at bed rest for two weeks, and after that she was allowed to be up but her home duties were restricted considerably.

Her past history may have been contributory to her recent ailment. She had had considerable upper respiratory difficulty. She had had three miscarriages, two

of them self-induced. In October, 1935, she went into labor at term and developed eclampsia. Her blood pressure went up to 200/120 from 126/84 within two hours. She had several convulsions and remained unconscious for twelve hours until she was delivered of a stillborn fetus whose cord was tightly wound four times around its neck. She made an uneventful recovery, and her blood pressure returned to her previous normal. However, her previous occasional headaches became much worse after this pregnancy. She was actually confined to bed for two or three days every month during her menstrual period due to "migraine" headaches. On July 24, 1937, she delivered a normal baby girl following a normal pregnancy and delivery. A few months after this delivery she again resumed having her headaches at irregular intervals. In June, 1939, she had a cholecystectomy and a left-side oöphorectomy.

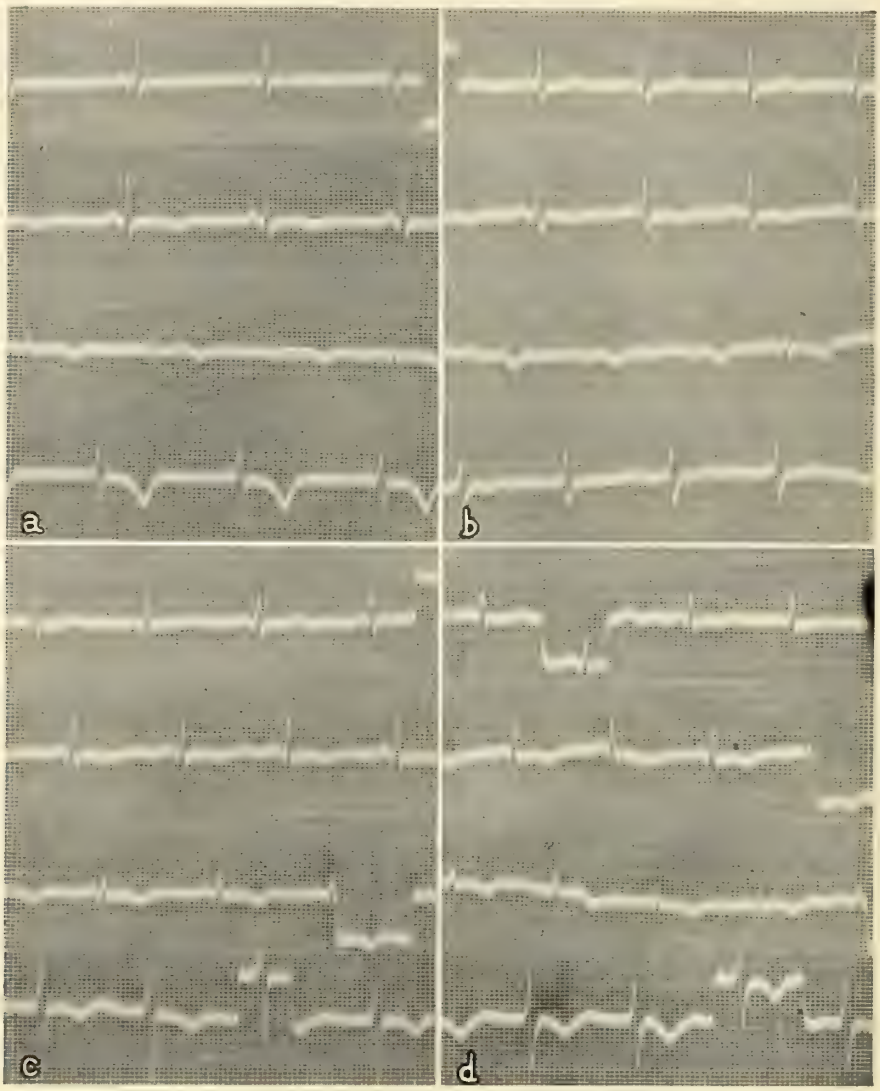


Fig. 4 (Case 5). Electrocardiograms taken (a) March 8, (b) March 13, (c) March 24, and (d) April 7, 1947, showing progression of myocardial disease.

On March 7, 1947, at about 8:00 p.m. following moderate exertion she suffered a very severe heart attack. The chest pain and tightness was very severe. Her dypsnea was very marked. She complained constantly that there was no air in the room. She was given an injection of ¼ grain of morphine and was hospitalized promptly and placed in an oxygen tent. A diagnosis was made of coronary thrombosis. Her progress in the hospital was rather poor at first. She had four acute attacks during her hospital stay. Her electrocardiogram on March 8, 13, 24 and April 7 all showed evidence of myocardial damage indicating progression of coronary disease (Fig. 4, a, b, c, d). Her sedimentation rate was 35 mm. in sixty minutes. The leukocyte count was 11,000. The patient was given dicumarol and other usual medications. She had a difficult time for over four weeks. Later, she too was taught to practice attentive breathing several times a

day. From observing her carefully, I believe it has contributed to the relief of her symptoms.

Six more cases of angina pectoris which were relieved of their symptoms by attentive respiration were briefly as follows:

Case 6.—H.R.S., male, aged fifty-nine. The established diagnosis after a careful examination was angina pectoris and mild diabetes. Length of observation was six years; and practicing attentive respiration for two years afforded him relief from symptoms.

Case 7.—E. F. S., male, aged fifty-six. The diagnosis was (1) angina pectoris following an attack of acute coronary thrombosis on July 16, 1943; (2) diabetes, diagnosed in 1939, requiring a daily dose of 45 units of insulin; and (3) hypertension with a blood pressure variation of 190 to 170 millimeters of mercury systolic and 110 to 100 millimeters diastolic. This patient had considerable anginal symptoms following his acute coronary episode. He was started on exercises of attentive respiration four months after his attack and he gradually obtained relief from his symptoms. He died September 5, 1947, following a cerebral hemorrhage and pulmonary thrombosis; however, in the interim he had obtained relief from anginal symptoms apparently through practicing attentive respiration and frequent short rest periods.

Case 8.—Mrs. B. R., female, aged forty-seven. Diagnosis was angina pectoris. The length of observation was three years. She has been practicing attentive respiration with absence of anginal symptoms for two years.

Case 9.—Mrs. M. S., female, aged fifty-two. The diagnosis was angina pectoris for the duration of two years. She obtained relief from her symptoms practicing attentive respiration for one year.

Case 10.—Mrs. M. O'B., female, aged seventy-one. The diagnosis was hypertension and angina pectoris. Her blood pressure was usually about 220 millimeters of mercury systolic and 120 diastolic. She obtained relief from symptoms by means of attentive respiration over a period of one year.

Case 11.—Mrs. M. F., female, aged sixty-five. She had suffered from hypertension for over ten years and was under my care for one year. The blood pressure reading varied between 260/130 and 210/124 millimeters of mercury. She had marked heart enlargement and anginal symptoms. She obtained relief from anginal symptoms by practicing attentive respiration exercises during a period of one year.

Discussion

The rationale for the help obtained from attentive breathing may well be attributed to the following considerations:

1. Potts,[23] Blair, Bell,[3] Falk[7] and others have called attention to therapeutic values obtained from breathing exercises in coronary thrombosis and pulmonary embolism.

2. According to Negovski,[19] the heart is one of two body organs that has "greatest recuperative power of all body organs." Attentive respiration probably affords favorable conditions for the recuperating heart, as I shall try to show later.

3. Macklin[17] has shown that during inhalation the blood vessels in the lungs not only lengthen but they also widen in caliber, thus increasing the blood vessel volume in the lungs, so that the blood is better areated. Undoubtedly it is for that reason that the editorial writer of the American Medical Association[6] calls the lungs "the secondary heart." Hence, increased inhalation time obtained in attentive breathing may be of value for a recuperating heart.

4. As one of the factors contributing to the possible values in attentive respiration, I wonder if the lungs may not have a massaging action upon the myocardium during inhalation when the lungs expand with air. Haldane,[12] in his book *Respiration,* states: "We bethought ourselves of some anatomical observations collected by Professor Arthur Keith in *Further Advanced in Physiology,* edited by Professor Leonard Hill, 1909. He showed in this essay that during inspiration the lungs do not expand equally and simultaneously at all parts, but open out part by part somewhat like the opening of a lady's fan. The parts nearest the moving chest walls (for distance, the diaphragm) expand first, and other parts follow." In diaphragmatic breathing we may well have expansion of the lungs from below upward toward the apices of the lungs, and in such lung distention there may be a massaging action upon the heart from its apex toward the base of the heart or a massaging action along the course of the coronary veins. When I watched patients in attentive breathing during relaxation, it seemed to me that they were doing diaphragmatic breathing, which may be of benefit by this apparent massaging action.

5. The lengthened time element and the reduced respiratory rate may be valuable factors to be considered in the help obtained from attentive breathing. Normal respiratory rates are usually considered to vary from about sixteen to twenty per minute. During inspiration the lung

tissues stretch and the stretching stimulates the vagus nerve.[2] However, H. R. (Case 2) has so well mastered his respiration while at rest that he breathes about three times per minute (Fig. 5) and very often I have observed him breathing only two times per minute, which means that the average duration of each respiratory phase was 10 to 15 seconds. All this brings to mind statements of August Krogh[14] as a result of his own work and that of others, that there is a latent period of between 4.6 and 8 seconds for the reaction of the autonomic nervous system, while A. J. Clark[4] claims the latent period to be 15 seconds. At any rate when the respiratory rate is not interfered with by the voluntary nervous system and is only two per minute, which means 15 seconds per respiratory phase, it is possible that more nerve endings will respond to the stretch stimulus than when the respiratory rate is 20 per minute, which means 1⅓ seconds per respiratory phase. When the nerve endings of the parasympathetic are stimulated,[2,4,10,11,16] acetylcholine is produced, which according to August Krogh[14] and A. J. Clark[4] constitutes a relaxant to the muscular layers of the blood vessels of the cholinergic system. But the acetylcholine thus produced at the nerve endings has but a brief moment for effective work, for acetylcholine is quickly destroyed by cholinesterase[11] that is present everywhere in the tissue. Hence, the longer inhalation period probably affords more acetylcholine production and smooth muscle relaxation. Also the increased acidity of inhalation following a lengthened exhalation counteracts the cholinesterase function[10,14] as will be shown later.

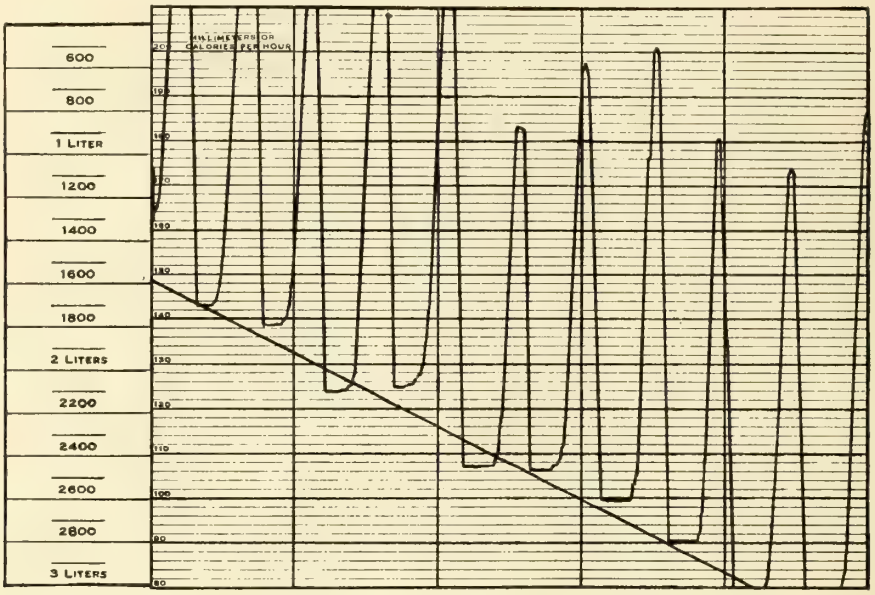


Fig. 5 (Case 2). Respiration chart illustrating an automatic respiratory rate of less than 3 per minute.

According to VanSlyke and others,[26] respiraton has a definite influence on the acid-alkaline balance of the living organism. The hydrogen ion concentration of the blood averages pH 7.4, but it fluctuates with respiration. During inhalation it becomes more acid, and the pH may go to 7.1, and during exhalation, when carbon dioxide is blown off, the blood becomes more alkaline, and it may reach a maximum of pH 7.8. The fluctuations in the acid-alkaline balance are less with shallower breathing. Otto Loewi,[16] Gesell, Brassfield and Hamilton,[9] Stella,[25] Clark[4] and others have shown that acetylcholine production is more favored by an increased amount of carbon dioxide in the inspired air. Now, when the respiratory rate is slower and deeper, the expired air will naturally have a greater percentage of carbon dioxide at the end of expiration.[22] So that on the following inhalation more carbon dioxide will be returned from the residual air space, thus favoring acetylcholine production. Gesell and Hansen[11] state, "An acid-moderating mechanism is built into the very foundation of nervous integration." Nechels and Gerard[18] state, "Exposing a stretch of nerve to carbon dioxide causes a marked

increase of total action potential up to five times the initial values." From the work of Gesell and Hansen,[11] and Nechels and Gerard,[18] it could be surmised that on inspiration, after a slow and lengthened expiration, the vagal nerve endings are being stretched and stimulated more in the presence of a greater amount of carbon dioxide than in shallow breathing, which in turn means a greater production of acetylcholine and a greater inhibiting action upon cholinesterase by increased acidity.

6. The improvement in the arterial oxygen saturation that comes from slow deep breathing is undoubtedly another favorable factor in attentive breathing. Comroe and Dripps[5] show that during inhalation the average alveolar oxygen pressure is 105 millimeters of mercury while during exhalation the average alveolar oxygen tension is 95 millimeters of mercury. A lengthened time interval for the higher alveolar oxygen tension is undoubtedly of value in supplying oxygen.

Best and Taylor[2] discussing shallow breathing and deep breathing indicate that arterial oxygen saturation is favored by slow deep breathing, rather than shallow rapid breathing, despite the fact that the minute volume of air breathed by shallow rapid breathing is greater than the minute volume of slow deep breathing.

Barach, Fenn, Ferris and Schmidt[1] in their work on "The Physiology of Pressure Breathing" show among other things that "a lowering of carbon dioxide pressure is advantageous because it permits the arterial blood to take up more oxygen in the lungs at the same oxygen pressure." It is evident that both intravenous and alveolar carbon dioxide pressure continue to fall during exhalation. For, as Best and Taylor[2] indicate, carbon dioxide is eliminated very quickly since the tissue permeability for carbon dioxide is thirty times that of oxygen; and of course a lowering of carbon dioxide alveolar pressure is obtained when exhalation is more complete and lengthened, while muscle tensions are consciously relaxed. All this seems to indicate that automatic slow respiration, both in the inhalation and exhalation phases, may reasonably be of value in the relief of symptoms in angina pectoris.

Conclusion

Attentive respiration was utilized as an adjunct in the treatment of eleven cases of angina pectoris, apparently contributing in their relief of symptoms.

I wish to express my thanks to Dr. George Fahr for his criticism.

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EARLY AMBULATION: CLINICAL RESULTS AND PREREQUISITES

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SINCE 1944 we have adopted the plan of early postoperative rising for our surgical patients. This practice is now so widely used that a review of the literature leading to this decision would be repetitious, particularly with the recent appearance of a monograph by D. J. Leithauser,[11] who is generally credited with repopularizing the procedure in this country. In fact, his bibliography lists 126 references for the history of early ambulation up to 1945; interest in this subject has resulted in additional papers since 1945.

The purpose of this presentation is to give our clinical results with this technique, to compare these results with a control series, and to discuss the principles of preoperative and postoperative care, which we feel must be mastered before properly applying this method.

Between the years of 1944 and 1947, 250 consecutive patients were selected who had been operated on for one of five different standard surgical procedures: gastric resection, colon resection cholecystectomy, hysterectomy, and herniorrhaphy. These procedures were selected because they represented varying degrees of surgical trauma. For purposes of comparison an equally distributed consecutive series of patients operated upon between 1939 and 1943 were studied as an example of late ambulation.

Clinical Results

Figures 1 to 5 illustrate the day of ambulation and the type of complication occurring with the entire group of 500 patients. The results will be compared first for each type of surgical procedure and then for the group as a whole.

Gastric Resection.—(Fig. 1) Fourteen complications occurred in fifty gastrectomies performed during the era of delayed ambulation. Four of these resulted in death. Of the nonfatal complications, thrombophlebitis and bronchopneumonia (probably atelectatic) were the most common. There were five complications in fifty gastric resections performed during the period of early postoperative rising without any deaths. Pulmonary complications were the most frequent ones seen.

Colon Resection.—(Fig. 2) In fifty patients of this group kept in bed for varying periods postoperatively, there were sixteen complications with seven deaths. Death was due most often to postoperative pneumonia. Another frequent complication in this period was wound infection. Of fifty patients resected during the recent period of earlier ambulation, there were twelve complications with one death. Pneumonia was a frequent postoperative complication but it was less often fatal. For unexplainable reasons, cystitis was seen more frequently in the latter period.

Cholecystectomy.—(Fig. 3) There were fourteen complications in fifty cholecystectomized patients allowed to remain in bed postoperatively; one of these resulted in a fatality. Abdominal distention was noted frequently as a postoperative complication. Of the parallel group of patients ambulated early after cholecystectomy, the only complication noted was a nonfatal postoperative pneumonia in one patient.

Hysterectomy.—(Fig. 4) In the group allowed prolonged bed rest after hysterectomy, there were five complications whereas in the group encouraged to ambulate early there were none. There were not enough complications of any one type to indicate a trend. There were no deaths in either group.

Herniorrhaphy.—(Fig. 5) The majority of these were of the inguinal type in which operation was performed under spinal anesthesia. There were six complications in the fifty patients treated by late rising and four complications in the fifty patients obliged to rise early. There were no deaths in either group.

Influence on Postoperative Temperature and Hospitalization.—A shorter and lessened febrile period has been described for the patient who

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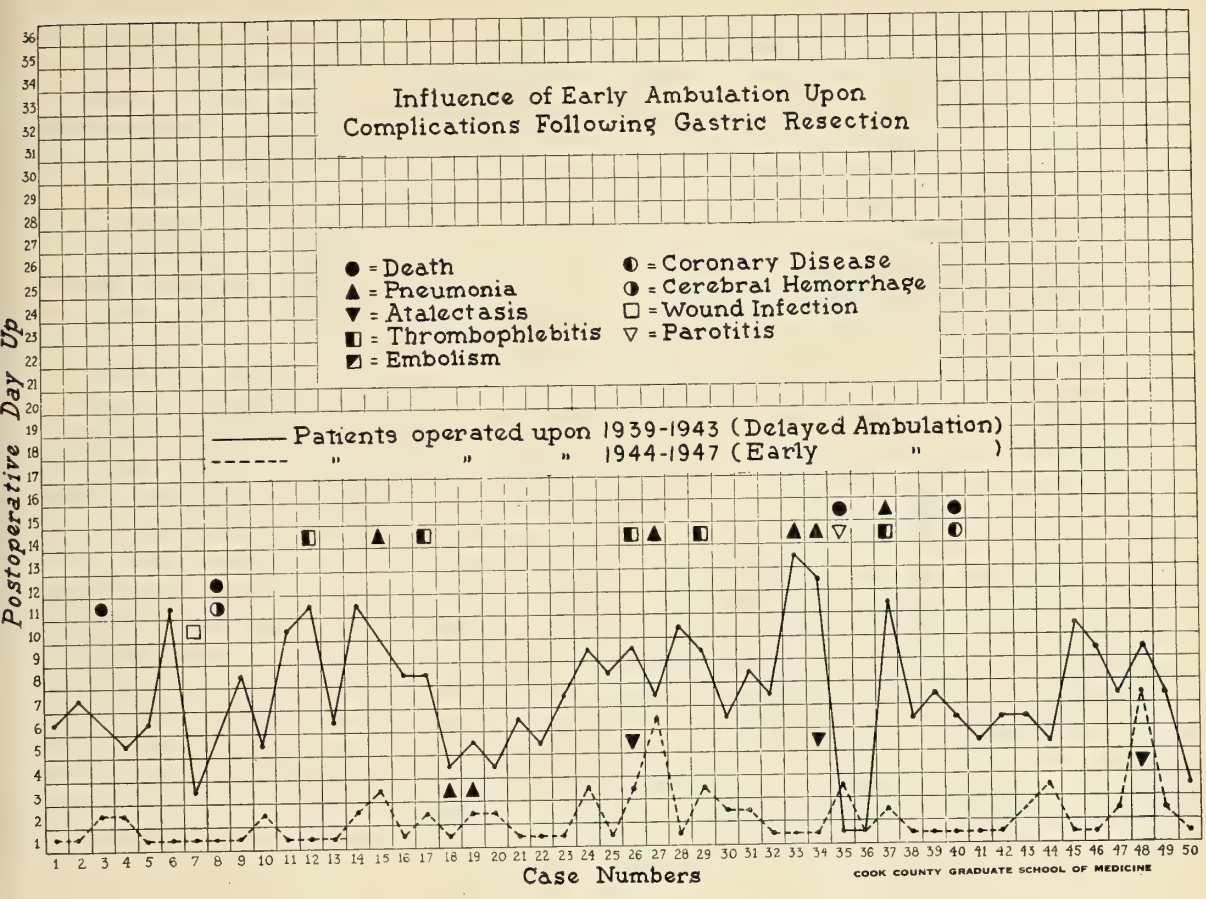


Fig. 1.

has ambulated early.[18] Our own series indicates a decrease in the average maximal postoperative temperature from 0.4° to 1.2° F. (Table I).

A shortened period of hospitalization would be anticipated as a result of early ambulation. Considering the individual surgical procedure it was found that following gastric resection, the early ambulated patient left the hospital on an average of 2 days earlier. 3.1 days earlier after colon resection, 5 days earlier after cholecystectomy, 2.7 days earlier after hysterectomy, and 2.4 days earlier after herniorrhaphy. In each instance all sutures were removed before discharge, and no patient was permitted to go home in the presence of a complication.

TABLE I. INFLUENCE OF EARLY AMBULATION UPON POSTOPERATIVE TEMPERATURES AND PERIOD OF HOSPITALIZATION

Operation	Number of Patients	Average Maximum Postoperative Temperature	Average Postoperative Hospital Discharge Day
Cholecystectomy			
Group I	50	102.2	14
Group II	50	101	9
Colon Resection			
Group I	50	102.2	24.7
Group II	50	101.8	21.6
Gastric Resection			
Group I	50	102.6	14
Group II	50	102	12
Hysterectomy			
Group I	50	101.4	12.6
Group II	50	100.8	9.9
Herniorrhaphy			
Group I	50	100.6	11.1
Group II	50	100	8.7

Group I: Operated upon 1939-1943—Delayed ambulation.
Group II: Operated upon 1944-1947— Early ambulation.

Total Complications.—In Table II total complications are aggregated for the 500 patients. A total of ninety-eight complications in 500 operations was experienced, of which twenty-eight occurred in the group ambulated early and seventy in the group ambulated late. This means that 11.2 per cent of the patients treated by early ambulation experienced complications whereas 28 per cent of those treated with late rising had such complications.

Considering the individual complication, it was found that out of thirteen deaths in the group of 500 operations, all but one occurred in patients

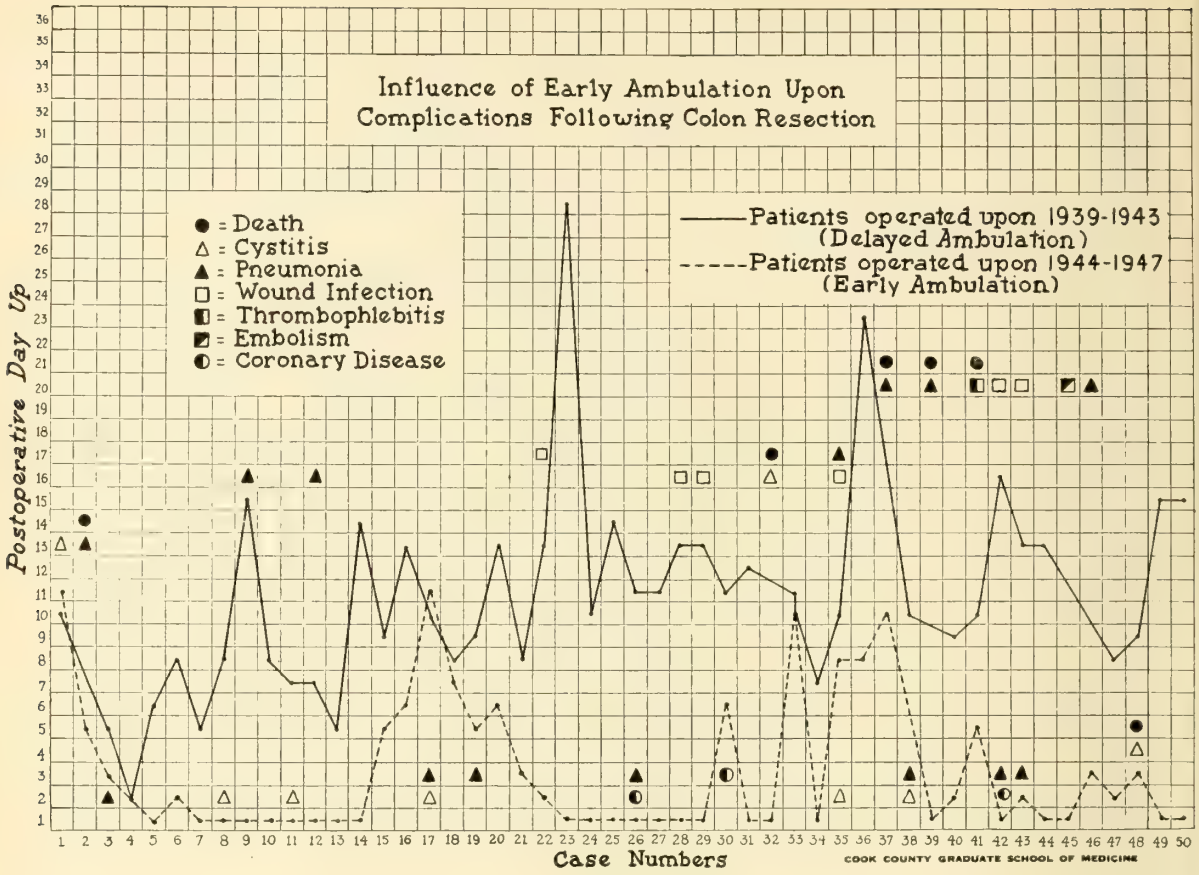


Fig. 2.

TABLE II. INCIDENCE OF COMPLICATIONS IN 250 PATIENTS TREATED BY EARLY AND LATE AMBULATION AFTER OPERATION

	Early Ambulation	Late Ambulation
Deaths	1	12
Pneumonia	10	16
Atelectases	3	3
Abscesses	0	2
Wound Infections	0	8
Thrombophlebitis	0	7
Cystitis	6	5
Pulmonary Embolism	0	1
Abdominal Distention	1	9
Bronchitis	3	1
Miscellaneous	4	6
Total Number of Complications	28	70
Percentage	11.2%	28.0%

who were detained in bed after the operation. Pneumonia occurred not only more often in the late risers but it was more often fatal. Postoperative infections, thrombophlebitis, and distention were seem more frequently in the group remaining in bed after operation. No significant difference in the incidence of atelectasis or cystitis could be discerned.

In the evaluation of these differences one might question whether or not changes in postoperative care might be a factor. While it is true that antibiotic therapy was introduced during the latter period of early ambulation, sulfonamides were available to the previous group, and blood transfusions and intestinal siphonage was available to both. Although it can be reasonably assumed that this change in chemotherapy may have well resulted in a lowered incidence of fatal pneumonia and serious postoperative infections, it would not adequately explain all the differences seen.

Surgical Prerequisites for Early Ambulation

As every paper on early ambulation hurriedly confesses, early ambulation is *not* a new procedure, and Emil Riese of Chicago is given credit for first reporting this procedure in 1899.[17] However, with few exceptions, the entire plan soon fell into disrepute in this country, but it continued to be practiced widely on the continent. The present revival has met with significant success,

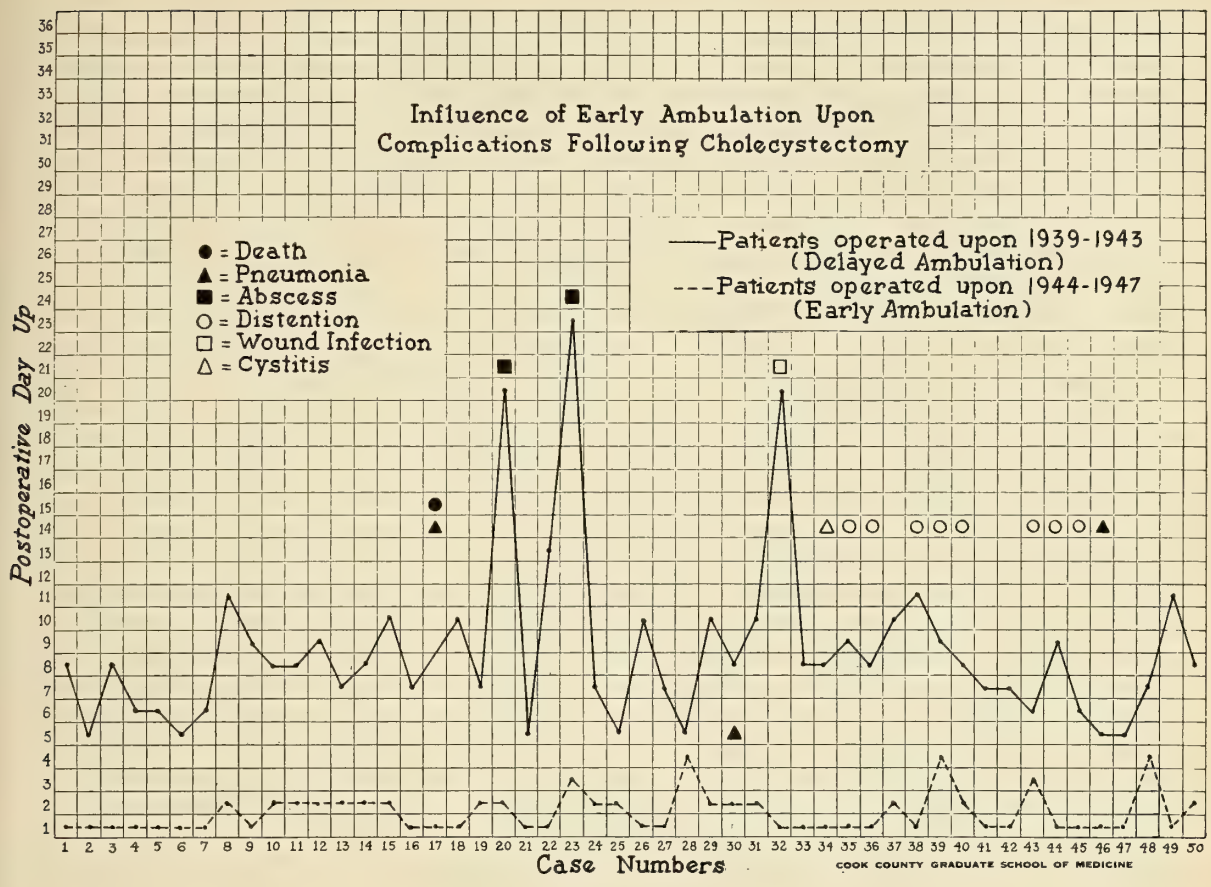


Fig. 3.

and if it continues to be so we believe it will be because of the application of sound physiological principles in preoperative and postoperative care. We consider the following ten principles as requirements to be fulfilled in the main before embarking upon this plan.

1. *Correction of dehydration* is paramount. Dehydration exists in a variety of surgical diseases, particularly in the presence of obstructing lesions of the gastrointestinal tract, diarrhea, fistulas, peritonities, burns and draining wounds.

In the presence of dehydration, there is a marked reduction in the plasma volume which leads to the development of shock. This reduction in the plasma volume also entails reduction in urinary excretion, with a consequent retention of nitrogen waste products. A decreased plasma volume affects the function of such important viscera as the liver, brain and the heart, any of which will render the patient a poor surgical risk.

The correction of dehydration implies the administration of water containing salt, carbohydrates and protein. This can be accomplished most rapidly by the intravenous route. The quantities to be administered will obviously vary with each disease and patient, but one of the best guides is the urinary output. For many years clinicians have recognized that operating on a patient with an inadequate urinary output is associated with a formidable mortality.

2. *Correction of vitamin deficiencies* seen in surgical patients involves primarily the crystalline, water-soluble vitamins B and C. This deficiency results because of the fact that there is no storage for these vitamins in the body and that a multitude of situations may occur in the surgical patient which will increase the excretion or loss of these vitamins. Among these conditions are sepsis, increased metabolism, jaundice, vomiting, diarrhea and intestinal fistulas. Added to this burden of a depleted vitamin reserve is the problem of the increased vitamin requirement. Phys-

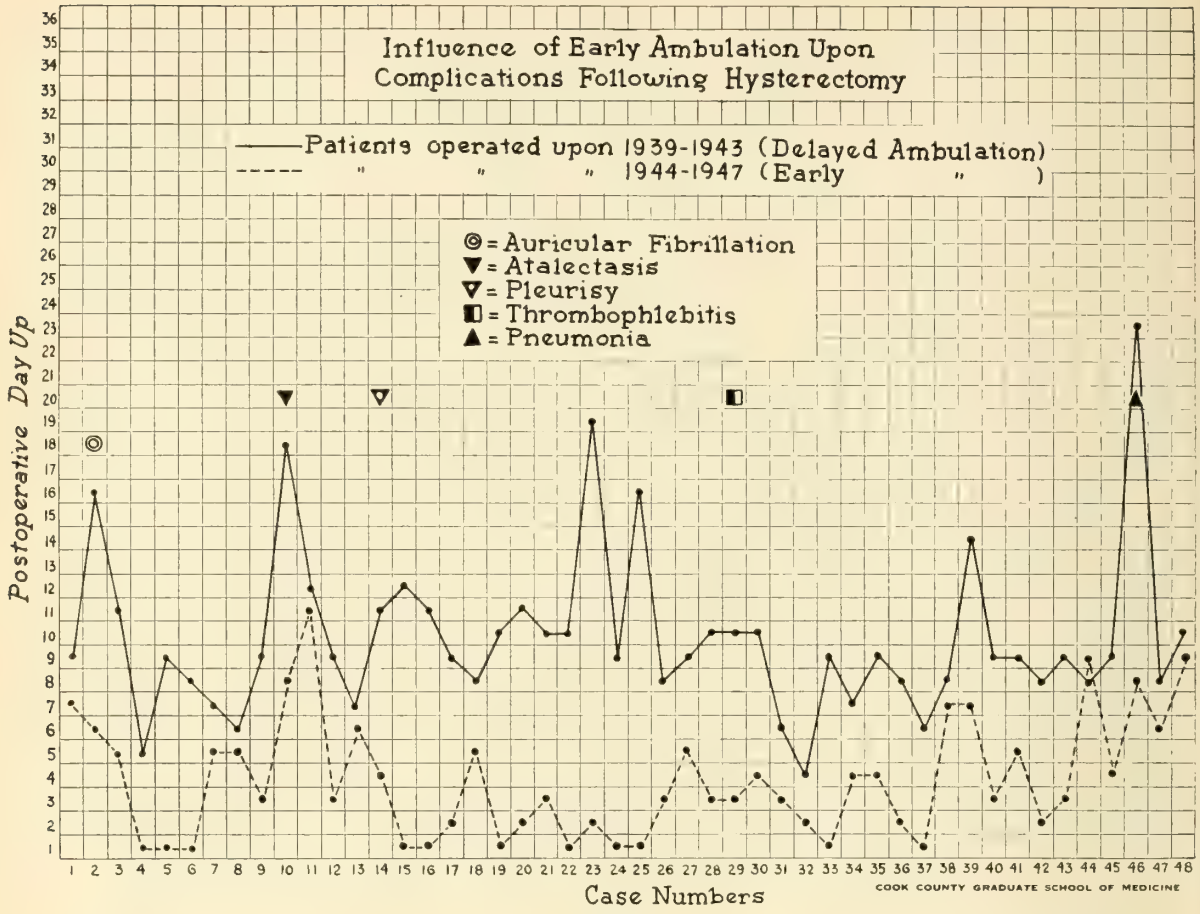


Fig. 4.

iologists are now agreed that thiamin, riboflavin and niacin are essential in carbohydrate metabolism. The experimental work on wound healing has conclusively shown that ascorbic acid is essential to the production of intracellular collagen between fibroblasts. The necessity for vitamin K in the synthesis of prothrombin by the liver is an outstanding contribution of the past decade. Fortunately, all of these vitamin deficiencies can be quickly rectified by the availability of a potent crystalline vitamin for intravenous use. They are to be included in any program wherein intravenous or subcutaneous fluids are required.

3. *Correction of protein deficiencies.*—The importance of protein metabolism was first recognized by surgeons who perforce were made cognizant of it by virtue of the fact that if the protein deficiency did not exist before operation it would only become aggravated after the operation. We have come to recognize that laboratory methods alone are inadequate for the recognition of this protein deficiency; for example, dehydration or infection could produce both a false elevation in the serum globulin fraction of the protein and therefore a falsely elevated total protein. We are also cognizant of the inaccuracies of many methods for determining blood proteins. Actually, the only accurate means at hand would be to determine the plasma volume by the injection of a dye together with the protein concentration. However, this method requires rather elaborate laboratory facilities and is not applicable to routine clinical use. From the clinical standpoint, the surgeon must learn to anticipate protein deficiency without the benefit of biochemical methods. We have taught therefore that hypoproteinemia can be assumed to exist in any surgical disease characterized by:

(a) Decreased intake of protein, such as from dietary restrictions and obstructions of the esophagus and pylorus.

(b) Decreased absorption of protein, such as

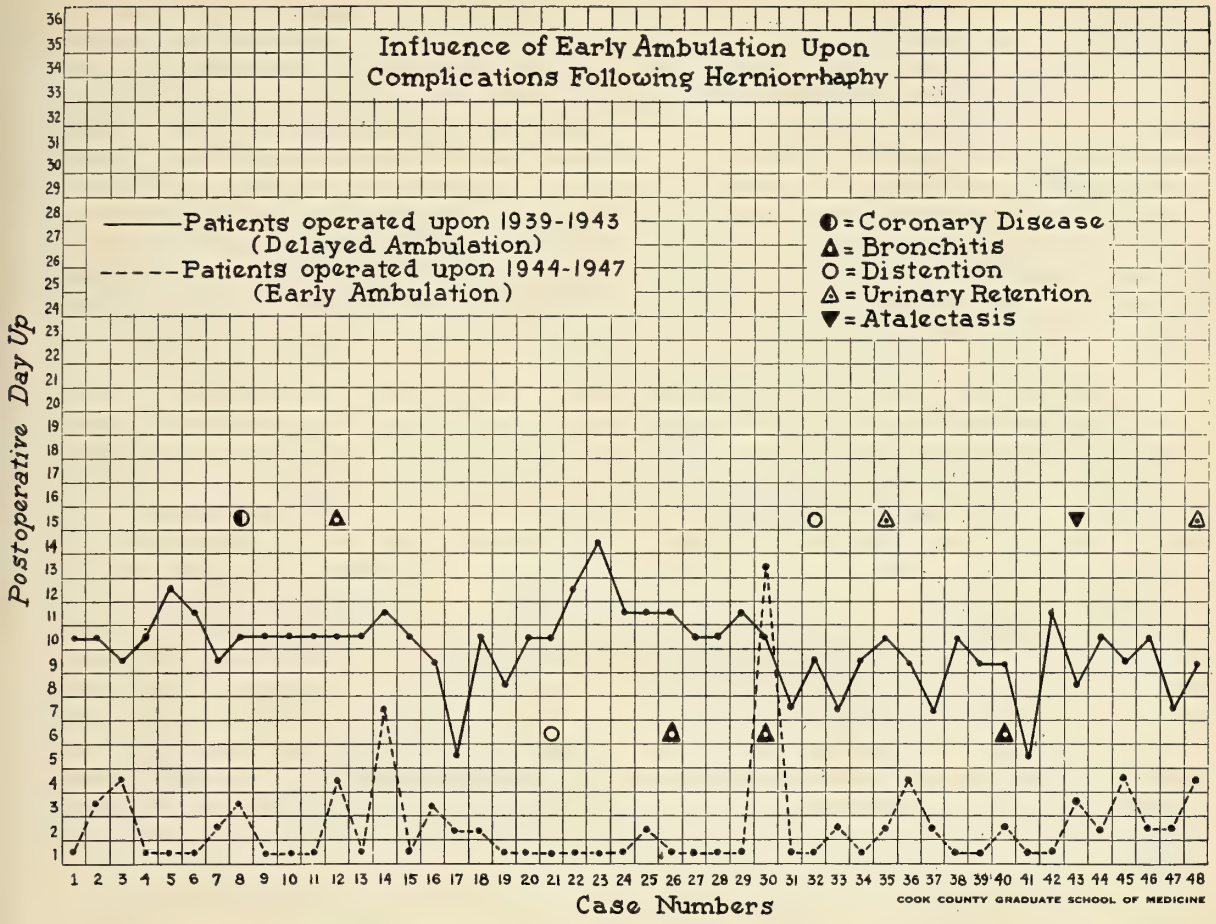


Fig. 5.

from any ulcerations of the gastrointestinal tract, carcinoma, obstructions or fistulas.

(c) Decreased synthesis of protein, such as from any of the various types of liver damage seen in icterus, cirrhosis and hepatitis. It is commonly agreed that the liver is the most important site for the synthesis of serum albumin.

(d) Increased loss of protein, which is particularly characteristic of surgical diseases such as burns, hemorrhage, peritonitis, abscesses, empyemas, diarrheas, vomiting, et cetera.

(e) Increased requirements for protein, such as in any fevers, hyperthyroidism and pregnancy.

The correction of protein deficiencies can be accomplished by one of four means:

(a) *Oral protein* which is still the simplest, the least expensive and the most widely applicable. If relying upon natural foods for sources of protein, one can augment this by insisting upon six feedings a day spaced through the twenty-four-hour period instead of the three meals a day conventionally given within a ten-hour period. In many instances the use of natural protein limits the quantity ingestable because of bulk. These can be supplemented by various digests now available, some of these being more palatable than others.

(b) The second method of correcting protein deficiencies involves the use of parenteral amino acids. Since the original report, barely ten years ago, a large number of casein digests have been developed for intravenous use which are safe, well tolerated and capable of producing positive nitrogen balance. It is important to remember that these solutions have to be well protected by carbohydrate intake lest they be used as a source of calories. It is also worth noting that the quantities of amino acids necessary to produce the desired results exceed those generally recommended.

We have found that serum protein levels frequently do not reflect the improvement, and prob-

ably weight gain is as good a criterion as any. Whenever possible, intravenous amino acids should only be relied upon to supplement protein taken by mouth. However, when oral feeding is impossible, this means may prove to be a life-saving measure.

(c) The use of plasma has now been largely given up because it has been found to be far too expensive a means of correcting protein deficiency. It has been found that approximately 2,000 c.c. of plasma would be necessary to produce a rise of the protein of 1 gm. per 100 c.c. This would be formidable from the point of view of replacement and purchase. We have found plasma protein usually produces a fall in protein concentration rather than a rise and have reserved the use of plasma chiefly for emergency treatment of shock and burns. The incidence of homologous serum jaundice attributable to pooled plasma has more recently led to its disuse except in the most dire circumstances.

(d) The use of whole citrated blood has delighted us with its clinical effectiveness. We administer here not only some 18 gm. of plasma protein with each unit, but also 75 gm. of hemoglobin and many other factors concerned with resistance to infection. So convinced have we become of the efficacy of blood transfusions in the management of the surgical patient that we have made it a dogmatic ruling to precede all of our major gastrointestinal surgery with a minimum of 2,000 c.c. of whole blood. This we prefer to have administered before operation when the patient's metabolism is such as to take fuller advantage of it.

Good clinical judgment for the preparation of the patient for elective surgery would be to combine the use of oral protein with intravenous amino acids and whole blood transfusions. This we have found most practical, for here we have a means of correcting tissue protein and circulatory protein losses.

4. *Correction of anemia.*—An underlying anemia probably exists more often than we are capable of recognizing. In many instances of hemorrhage, there is a compensatory dehydration which will falsely elevate the blood count just as it may falsely produce a rise in the serum globulin. Such a situation is frequently demonstrated by repeating the blood count or hematocrit after the administration of fluids. The presence of anemia demands even more frequent transfusions of whole blood than when there is plasma protein deficiency alone. We know of no criteria for determining the quantity of blood that will be necessary. On the other hand, we know of no reason for limiting the number of transfusions. Therefore, the quantity of blood to be administered to the anemic patient is that amount which will produce a satisfactory blood picture and clinical condition, whether this means one or twenty transfusions.

5. *The use of transverse incisions* is to be preferred to vertical incisions in patients in whom early ambulation is contemplated. The reason for this is that the transverse incision has a lower incidence of evisceration, nerve destruction and herniation. Although this point cannot always be followed, the principle is nevertheless a good one.

6. The use of *interrupted sutures* we consider important in this program, whether it concerns the wound or a gastrointestinal anastomosis. By this means we believe the lines of tension are more equally distributed and there is less narrowing of the lumen. We consider the use of interrupted sutures of more importance than the type of suture used.

7. The use of *permanent sutures* would seem to have a definite advantage, in that they produce less tissue reaction than catgut sutures, attain a maximum tissue strength which is maintained indefinitely and are less apt to become infected. We have preferred silk and stainless steel wire. Others prefer cotton. We are quite interested in the fact that quite a number of men who practice early ambulation have done so with the use of catgut sutures in the wound.[18]

8. *Wound infections are cautiously avoided,* and this usually implies the avoidance of trauma and hematoma. In operations such as those on acute gangrenous appendices with soilage, we have found very helpful the insertion of a drain down to but not through the peritoneum as a means of minimizing wound infections.

The need for chemotherapy in some of these patients does not necessarily mean discontinuation of the early ambulation program. Although sulfonamides still have a place in chemothera-

peusis, we prefer at present in most laparotomies a course of penicillin medication whenever an actual infection exists or prophylactically. In the colon surgery cases the nonabsorbable sulfonamides—sulfasuxidine or sulfathalidine—are used in conjunction with penicillin because of their local bacteriostatic effect. No sufficient data for the specific need of streptomycin in some of these cases have as yet been obtained. We found 20,000 units of penicillin at three-hour intervals to be a sufficiently large dose for most of the patients in our series. In some instances, a larger dose than 20,000 units of penicillin might be necessary, but this is best determined by running a sensitivity test on the causative organism.

9. *Patients should be informed* before operation that they are to be ambulated early. This will allay apprehension, procure better co-operation, and make the patient more interested in his convalescence.

10. *The choice of anesthetic* is important, and wherever possible we prefer spinal anesthesia because it provides us with a more co-operative patient.

Advantages of Early Ambulation

The results of early ambulation as reported from many independent sources can now be determined from the observation of several thousand patients; the criteria for evaluation are clinical, with only a few animal experimentations to support such observations. However, the accumulated data are so unanimously in favor of early rising that a consideration of these advantages, even in the present theoretical stage, probably has much to support it.

Decreased pulmonary complications could be anticipated, for as Cutler and Hoerr[5] point out, 50 per cent of postoperative pneumonic complications occur in the first twenty-four hours, and 90 per cent within the first four days. If, as we now believe, the majority of these are atelectatic originally, then any maneuver which improves the cough reflex, the expectoration of mucus, an increased vital capacity and lung volume will minimize this complication. McMichael and McGibbons[14] have reported a 340 c.c. decrease in lung volume as a result of recumbency, and a 780 c.c. decrease in supplemental air as the result of elevation of the diaphragm. Churchill and McNeil[4] observed the effect of cholecystectomy and appendectomy upon the vital capacity in patients kept in bed after operation as was customary in 1927. Leithauser[10] repeated these studies in 1943 in patients with similar operations, but obliged them to ambulate early after operation. The diminution of vital capacity postoperatively was less in degree in Leithauser's series and the return to normal was materially hastened. Blodgett and Beattie[2] noted a decreased incidence of atelectasis from 6.3 per cent to 4.3 per cent as the result of instituting ambulation at the Peter Bent Brigham hospital. However, as noted by Leithauser,[11] not only early ambulation but hydration, medication, anesthesia, choice of incision, and distention are also factors in the production of atelectasis.

Decreased vascular complications appear to have considerable experimental evidence to support it. In dogs ambulated early there was a 250 per cent increase in the flow of blood from the inferior vena cava. Smith and Allen[19] noted a prolonged circulation time in bed-ridden postoperative patients by the second postoperative day, which is prolonged 50 per cent above preoperative controls by the tenth postoperative day. Actual decrease in circulation time from 1.5 to 4.5 seconds have been reported in patients following earlier ambulation. Bed rest tends to pool blood in pelvic and calf veins; rest in bed tends to collapse veins, especially if pillows are used, and this leads to intimal injury. Thus the combined influence of stasis and intimal damage are present precipitating thrombus formation. Further investigative evidence apropos of this phase of the problem is the observation of Snyder[20] that recumbency leads to a decreased cardiac output, and of Mayerson and Burch[13] that recumbency is associated with a venous pressure and blood volume deficit.

Clinical results are somewhat more equivocal. Dahl-Iverson[6] reported a drop in the incidence of phlebitis, thrombosis, and embolism from 3.5 per cent to 0.58 per cent with the institution of earlier ambulation. Von Jaschke[3] reported 300 patients treated by delayed ambulation with a 2 per cent incidence of thrombosis and a 1 per cent incidence of fatal emboli. In 387 patients treated by early rising, the incidence of thrombosis dropped to 0.5 per cent and there were

no fatalities from emboli. Blodgett and Beattie[2] found a rise in the incidence of phlebitis with early ambulation from 1.8 per cent to 3.2 per cent, but expressed doubt as to the value of their observation in view of the length of their series. Burch and Fisher[51] reported two fatal emboli in 2,827 individuals ambulated early, one on the tenth postoperative day and one on the sixty-seventh postoperative day. In our series there was a significant decrease in the incidence of thrombophlebitis as the result of earlier activity, but as to phlebothrombosis, we have not seen a decided trend. Possibly the prophylactic use of anticoagulants or femoral ligation may prove more decisive factors than the use of early rising.

Since the preparation of this paper we have seen two cases of fatal pulmonary embolus in patients ambulated early. One occurred in a patient who was treated with dicumarol for a phlebothrombosis following an abdomino-perineal resection. This produced massive bleeding from the perineal wound, and ten days after discontinuance of the dicumarol the patient expired from a pulmonary infarction. Another fatal episode occurred in a patient twenty days after the closure of a perforated carcinoma of the sigmoid which had produced a purulent peritonitis. This would indicate that the problem of thromboembolic disease is still a challenge.

Decreased wound complications seem to be characteristic of early ambulation. This is possible by virtue of the decreased lag period in the wounds healing under the influence of early walking which in turn is attributed to increased blood supply, more efficient lymphatic drainage, and less atrophy due to disuse. Newburger[15] found that the abdominal wounds of rats forced to exercise early attain a higher tensile strength earlier than did the control rats allowed to rest. Blodgett and Beattie[2] reported a drop in the incidence of wound infections from 5.7 per cent to 2.7 per cent as the result of ambulation, and of evisceration from 2.8 per cent to 1.1 per cent. Leithauser and Bergo[12] reported only one evisceration in 900 cases of early rising. A decreased incidence of postoperative hernia as the result of earlier ambulation has been noted by Powers,[16] Ashins,[1] Schafer and Dragstedt,[18] and Elman and Akin.[8]

Decreased postoperative fever both in degree and duration has been reported by D'Ingianni,[19] by Schafer and Dragstedt,[18] and was noted in our own series. The mechanism accountable for this is not apparent.

Fewer catheterizations might be anticipated and were so reported by D'Ingianni.[7] However, we have not seen a significant decline in our own experience.

Fewer hypodermics have been claimed.[7] Early rising is attended by a diminution in wound pain, which would therefore lead to the use of fewer analgesics.

Improved gastrointestinal function has been claimed and is manifested by an earlier return of appetite, fewer gas pains, less distention and ileus, need for fewer enemas, and a decreased period of postoperative starvation. A claim has also been made for fewer adhesions with earlier ambulation due to the more frequent change in the position of the viscera.

Decreased incidence of decubitus ulcers is logical because of the improved nutrition and earlier relief of pressure effects from continuous supine position.

Earlier return of strength and a sense of well-being is clearly manifested in the early rising patients. It is not unusal for a patient to shave himself three or four days after a gastric resection. The psychological advantage is worth attaining for the patient who gets out of bed early assumes that he is doing well, otherwise he would not be allowed out of bed.

Improved liver function and nitrogen balance has been reported for patients ambulated early after herniorrhaphy[20] compared to controls. Early ambulation did more for the attainment of a positive nitrogen balance than did a variety of methods for increasing nitrogen intake in bed-ridden patients.

Economic advantages of early ambulation are accrueable to the patient, the hospital, and the employer. The period of disability is lessened and, therefore, the financial deficit is minimized for the patient. The number of days of hospitalization after operation is materially decreased as is the amount of nursing care, thereby easing the problems confronting most hospitals throughout the country today. The earlier return of the

employee to productive efforts is a boon to industry.

Contraindications to Early Ambulation

No discussion of early ambulation would be complete without a consideration of possible contraindications. Failure to recognize that not all patients can be ambulated early has probably led to the abuse and disuse of this program in the past. Each patient should be individually evaluated, and if any of the following extenuating factors are present, final judgment may well be to defer ambulation.

1. *Shock:* hypotension is aggravated by motion and the erect position.

2. *Hemorrhage:* because of the attendant shock and fear of encouraging more bleeding with motion.

3. *Generalized peritonitis:* because of the pain, distention, and sepsis.

4. *Unrelieved intestinal obstruction:* because of the distention and the resultant tension on wounds.

5. *Pulmonary infection:* because of tachycardia, dyspnea, toxemia.

6. *Wound evisceration or extensive wound infection:* tensile strength of wound is diminished.

7. *Severe toxic states:* irrational states such as are seen in thyroid crisis, sepsis.

8. *Cardiovascular complications:* ambulation would add to the load of a burdened myocardium.

9. *Extreme debility:* nutritional deficiencies.

10. *Severe anemia:* cerebral anemia aggravated in the erect posture.

Summary

1. The postoperative complications of 500 surgical patients after the performance of one of five standard surgical procedures (gastric resection, colon resection, cholecystectomy, hysterectomy and herniorrhaphy) were studied in relation to early or late ambulation.

2. There was a total of ninety-eight complications among 500 patients; twenty-eight of the complications occurred in the 250 patients ambulated early and seventy in the other half ambulated late, 11.2 per cent and 28.0 per cent respectively.

3. There was a total of thirteen deaths (included in the ninety-eight complications), of which all but one occurred in the group with prolonged bed rest.

4. Pneumonia not only occurred more frequently in the late risers but also was more often fatal.

5. Postoperative wound infections, thrombophlebitis, and distention showed a definite decline with early ambulation, whereas pulmonary atelectasis and cystitis did not.

6. A significantly shortened period of hospitalization was seen for each of the procedures when followed by early ambulation.

7. A detailed consideration of the prerequisites for early ambulation, its advantages, and contraindications is presented.

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CALCIFIED NODULAR AORTIC STENOSIS

A Study of Eighteen Pure, Advanced Cases

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The usual form of aortic stenosis is the calcified nodular deformity, where the oriface is reduced to a narrow slit-like opening, the leaflets having been made rigid by the deposition of calcium and fibrous tissue in the form of massive nodules with a fusion of the edges of the adjacent leaflets. This cardiac lesion deserves more emphasis than has been given it by most clinicians and pathologists because it represents a distinct entity that is unlike other valvular lesions in its course and manifestations and because it remains a subject of great dispute with regard to its etiology and pathogenesis. The present study was undertaken in an attempt to further elucidate the clinical picture that one might expect from this lesion.

Those interested in the controversial subject of etiology of calcified nodular aortic valvular disease should review the publications of Monckeberg,[7] Sohval and Gross,[11] Margolis, Ziellessin and Barnes,[6] Sophian,[12] Christian,[1] Clawson,[2] Clawson, Noble and Lufkin,[3] Dry and Willius[4] and Hall and Ichioka.[5]

TABLE I. INCIDENCE

	Number
Autopsies	2,987
Aortic stenosis, all forms	90
Aortic stenosis, pure and advanced	18
Hospital Admission	95,266

Material for Study

The studies of calcific aortic stenosis that have been carried out to date have for the most part included those of all degrees of intensity and combined with other valvular heart lesions. In a study of the clinical features of this lesion as is the primary purpose of this study, an inclusion in the series of valvular deformities besides aortic deformities would lead to confusion as one would not likely know which symptom or finding was due to which valve deformity; and, an inclusion of the milder degrees of stenosis would be undesirable because they seldom give rise to any complaints. Consequently, the cases that are reviewed in this study are those of calcified aortic stenosis considered to be sufficiently advanced to give rise to a definite clinical picture and free of any other valvular deformity considered sufficient to complicate the clinical picture. Eighteen such consecutive cases, all determined by autopsy examination, have been selected for study (Table I). During this period of 10 years a total of 2,987 autopsies were performed. Ninety of these were cases of calcified nodular aortic stenosis representing all degrees of deformity and all combinations of valvular lesions. There were 95,266 admissions to the hospital during this period.

Karsner reviewed 200 cases of aortic stenosis in which he reported the following distribution of cases:

Aortic stenosis and other gross rheumatic lesions	
No deformity	25
Slight stenosis	36
Moderate stenosis	9
Marked stenosis	21
	91
Aortic stenosis, pure	
No deformity	53
Slight stenosis	23
Moderate stenosis	10
Marked stenosis	23
	109

The 23 cases considered a marked, pure aortic stenosis in Karsner's series are probably comparable to the cases presented in this study.

TABLE II. AGE AND SEX
St. Luke's Hospital

Age	Male	Female	Total
20-29	0	0	0
30-39	1	0	1
40-49	2	1	3
50-59	1	1	2
60-69	1	1	2
70-79	6	0	6
80-89	4	0	4
90-99	0	0	0
Total	15	3	18

Age and Sex

Fifteen of our eighteen cases were in males (Table II). In Karsner's series there were 200 males and 144 females. Eight were found to be under seventy years of age while the remaining ten were seventy or over. The average age was sixty-three years. Karsner found calcified aortic stenosis to be three times as frequent among persons fifty years or more as among those less than fifty. Calcified aortic stenosis then is essentially a disease of old age; nevertheless, it does occur in the younger age groups and is recorded occasionally in the early twenties. The average age of other authors varies from fifty-two to sixty-five years.

Calcific aortic stenosis is a disease predominantly of males, having been found five times as frequently in males as in females in this series. There was no need for correcting these figures for the relative frequencies of men and women in our entire autopsy series as their

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frequencies were very similar. Other authors report ratios ranging from 1.6 males to 4.5 males for each female.

TABLE III. SIGNS AND SYMPTOMS
(At time of last admission)

Clinical	Number	Percentage
Dyspnea	14	77
Orthopnea	10	55
Angina	10	55
Cough	7	39
Edema	7	39
Palpitation	3	16
Syncopé and Dizziness	3	16
Ascites	3	16
Cyanosis	3	16
Sudden death	2	11
No symptoms	2	11

Signs and Symptoms

A review of the signs and symptoms at the time of the last admission (Table III) revealed the most frequent symptom encountered and the first symptom to develop in most cases to be dyspnea or exertion, having been found in 77 per cent. It was frequently accompanied by some degree of orthopnea, especially as death was approached. Dyspnea can readily be explained as a transient episode of left heart failure. The heart during the period of gradual compensation through hypertrophy and dilatation to the increased demands laid upon it by progressively narrowing aortic valves, temporarily cannot cope with the demands of increased exertion until it responds through dilatation or until the exertion is removed. Ultimately, the time comes when the heart's capacity for compensation will have been reached and the dyspnea becomes permanent.

Angina pectoris was a complaint in 55 per cent of the patients when seen at the time of last admission. Particular emphasis must be placed on the symptom because it is undoubtedly the reason for the diagnosis of coronary disease in so many of the cases where angina occurs, neglecting entirely the possibility of a valvular disturbance. Angina is a symptom that rarely occurs in mitral stenosis or aortic insufficiency; consequently, when found accompanied by any organic heart murmur it should lead one to suspect calcified disease of the aortic valves. The explanation of angina pectoris as it occurs in aortic stenosis is not settled with any certainty. It was once thought that it might be due to narrowing of the coronaries. Karsner, as late as 1947, found some degree of coronary sclerosis in all his cases and believes this to be a factor in the production of angina. Most investigators, however, have been unable to find any increased incidence of coronary sclerosis in these cases; in fact, Dry and Willius concluded that the degree of sclerosis occurred in inverse proportions to the degree of aortic stenosis. Clawson suggested that the calcific nodules may be impinged on the coronary ostia but this has never been verified. Contratto and Levine offer an explanation based on physical principles. They suggest that the increased velocity of the blood flow past the coronaries serve to suck the blood from the coronaries, thus reducing their inflow. Even though they are able to compensate by dilating, they are still not able to supply sufficient blood for the tremendously increased demands in this condition with the ultimate result of a myocardial ischemia and consequent angina. This is purely theoretical and has never been proved. Green held the view that aortic stenosis decreased the coronary blood flow during systole by causing a relatively higher degree of resistance in the coronary bed during the systolic contraction of these powerful hypertrophied hearts. His cases with angina had larger hearts than were found in the others. Another explanation offered at this time is based on two established facts: that the systolic contraction period of the cardiac cycle is prolonged in aortic stenosis and that coronary filling occurs during diastole. The diastolic phase of the cardiac cycle is shortened correspondingly to the lengthening of the systolic phase at a given heart rate with the result that the coronaries are incompletely filled during this short diastolic phase.

TABLE IV. CORRELATION OF ANGINA WITH CORONARY SCLEROSIS AND HEART WEIGHTS

Group A	Average Heart Weight	Coronary Findings	Number Cases
No angina (8 cases)	577 grams	Grade II sclerosis	3
		Grade I	3
		Grade 0	2
Group B Exertional angina (5 cases)	603 grams	Grade II	2
		Grade I	3
Group C Sudden severe pain (5 cases)	621 grams	Grade IV and thrombosis	1
		Grade II	1
		Grade I	2
		Grade 0 and embolism	1

The cases of angina in this series were studied and correlated with the weight of the heart and the size of the coronary lumina (Table IV). In those cases not demonstrating angina, the degree of sclerosis did not differ appreciably from those that complained of exertional angina. In only two of the five patients who complained of excrutiating precordial pain was there any coronary findings to account for it. One had a severe grade of coronary sclerosis, a coronary thrombosis and myocardial infarction. The other had a coronary embolism. The coronary ostia were patent in all of the cases. There appears to be a significant difference in the heart weights among the three groups. From this study one can conclude that in most cases of aortic stenosis, disease of the coronary vessels and their ostia cannot account for the common complaint of angina. There may be a greater frequency of angina in the heavier hearts.

Syncope and dizziness are of considerable diagnostic significance when they occur; however, they are not frequently encountered in this series, where they were only 16 per cent of the total. These symptoms are believed to be due to impairment of cerebral circulation because of the inability of the aortic pressure to fill the cerebral vessels adequately.

Sudden death, that is, a sudden turn for the worse in a previously stabilized individual with death following in a few hours, occurred in two of our patients (11 per cent). One, a sixty-three-year-old female, was awakened from sleep with profound dyspnea. She was brought

immediately to the hospital where she was found to be unresponsive, cyanotic, and severely dyspneic, dying thirteen hours after admission. Her coronary vessels were entirely normal. The second case was an eighty-four-year-old male with a previous history of aortic valvular disease, who suddenly was overcome with acute cardiac distress, dying twenty-one hours after admission to the hospital. His coronaries were found to have grade IV sclerosis with a thrombosis and myocardial infarction. The aortic valvular disease was considered an incidental finding at the necropsy. Similar percentages have been found by other investigators, the average of all other figures being 11.5 per cent. The majority of reported cases have occurred during chronic congestive heart failure with no immediate cause demonstrable. The possibilities suggested to explain this occurrence are coronary thrombosis, a myocardial ischemia producing heart block or ventricular fibrillation, and sudden cerebral anemia.

TABLE V. PHYSICAL FINDINGS AT TIME OF LAST ADMISSION

Findings	No.	Percent
Systolic aortic murmur	13	72
Aortic diastolic murmur	3	16
Mitral systolic murmur	7	39
Precordial systolic murmur	4	22
Mitral diastolic murmur	4	22
Pulmonary congestion	13	72
Pleural effusion	3	16
Hepatomegaly	4	22
Cardiac enlargement	11	61
No findings	0	0
Positive findings	18	100

Physical Findings

The most frequently and most characteristic physical finding (Table V) is the murmur heard over the entire precordium but loudest over the aortic area, i.e, the second right interspace, which if heard alone is pathognomonic of aortic stenosis. It can be transmitted along the right manubrial border and classically it is transmitted in the right or in both carotid arteries, and in the right and sometimes both subclavians. When extreme it can be heard at some distance from the body. The murmur is a harsh, rough, saw rasping murmur when the stenosis is of an advanced degree. This murmur was found in 72 per cent of the eighteen cases presented. Karsner has been able to find no difference in the incidence of murmurs with the varying degree of stenosis; however, he did find a relation between the quality of the murmur and the degree of stenosis. The loud, harsh, rough murmur was heard most frequently in cases of marked and moderate stenosis, with a soft blowing aortic murmur in cases of slight to moderate stenosis. An aortic thrill will frequently be felt in advanced cases, especially when the patient is examined leaning forward with the flat of the hand over the aortic area during full exhalation. With marked decompensation the thrill will often disappear and the murmur loses its harshness and intensity.

The absent or greatly diminished second aortic sound is perhaps the most single confirmatory sign. It may sometimes be replaced by a soft blowing diastolic murmur which, unfortunately, is not a common finding, Reich[8] having found it absent in 9 per cent of cases of pure aortic stenosis. When the second aortic sound is absent the aortic stenosis will most certainly be of a severe grade with extreme rigidity of the aortic cusps to account for the absent second sound.

An aortic diastolic murmur was heard in 16 per cent of our cases. This figure is low in comparison with other published results, Reich[8] having reported it in 40 per cent of the cases in his series. It is usually assumed to indicate some associated aortic insufficiency.

An apical systolic murmur was found in seven cases (39 per cent). When present it can be assumed to mean either a mistaken identity, a relative mitral insufficiency from dilated left ventricle, or organic mitral insufficiency although no such cases were included in this series.

Presystolic and diastolic mitral murmurs were heard in four of twenty-two cases. They may mean in the cases presented here an Austin Flint murmur from accompanying insufficiency or possibly a mistaken identity. When heard otherwise it usually means an associated mitral stenosis. In Karsner's 200 cases of mixed valvular lesions he found eighteen presystolic mitral murmurs of which fifteen were proved at autopsy to be due to mitral stenosis. In eighteen cases of diastolic mitral murmurs nine were proved to have mitral stenosis.

Failure to localize the murmur to any particular area, employing the term "precordial murmur" is generally recognized as a common finding (22 per cent in this series). The reason for the failure of this murmur to localize is not known.

The classical pulse of an aortic stenosis is the "pulsus tardus et parvus." The recorded pulse wave will show a slow rise and fall with an intervening plateau, the entire amplitude being greatly reduced. There may be a slight interruption near the summit, the anacrotic pulse, or it may have a bifid apex, the so-called pulsus bisferiens. Clinically, there is a definite delay in the rise of the pulse with a peak occurring later than is the case in a normal pulse. This characteristic pulse has not been frequently found by most authors, perhaps because of the combinations with varying degrees of insufficiency as most aortic stenoses seem to have.

Aortic stenosis does not affect the systolic blood pressure and it will either decrease the diastolic pressure slightly or not at all. The pulse pressure, consequently, is normal or slightly increased. Blood and pulse pressures are not informative then because of the little effect that aortic stenosis has on them and because of the many other variables that are usually present which do affect the blood pressure.

Cardiac enlargement was demonstrated in eleven cases or 61 per cent at the time of the last admission to the hospital. The heart is characteristically enlarged to the left and downwards as far as the sixth and even the seventh intercostal spaces. The heaving apex may be seen four or five cm. in breadth in the intercostal spaces; however, when completely compensated the apex is not demonstrably enlarged.

The electrocardiogram shows nothing specific for this condition. It demonstrates left ventricular strain by left axis deviation and more so by negativity of the T-waves in leads I and I and II. Evidence of delayed conduction

are seen occasionally, including bundle branch block, interventricular block, or auricular-ventricular block of various degrees ranging from prolonged A-V conduction to complete dissociation. This delayed conduction has been explained on several bases: extension of the calcific process into the bundle of His and myocardial ischemia. Friedberg and Sohval[11] felt it unlikely that an extension of the lesion is the explanation because this extension cannot be demonstrated on specimens, because the disturbances vary so much for a fixed lesion and because it would not involve a single bundle.

TABLE VI. DURATION OF SIGNS AND SYMPTOMS

History of	5 years or more		2-5 years		6 mos. to 2 years		1 mo. to 6 mos.		Last mo.	
	No.	%	No.	%	No.	%	No.	%	No.	%
Dyspnea	5	28	6	33	10	56	10	56	14	77
Orthopnea	2	11	2	11	3	16	3	16	10	55
Angina			2	11	3	16	3	16	10	55
Cough					2	11	3	16	7	39
Edema	1	6	2	11	4	22	6	33	7	39
Palpitation	1	6	2	11	3	16	3	16	3	16
Syncopé	1	6	1	6	2	11	2	11	3	16
Ascites							1	6	3	16
Cyanosis									3	16
Sudden death									3	16
No symptoms	13	72	11	61	5	28	5	28	2	11
Positive symptoms	5	28	7	39	13	72	13	72	16	89

*The percentages in this table were calculated on the basis of the entire series of eighteen as the histories of the duration of the complaints whether from the single last admission record or from a combination of old records are reasonably accurate.

The use of fluoroscopy and roentgenograms in the clinical diagnosis of calcified aortic stenosis is fast becoming of great importance. One might expect from observing the amounts of calcium in some of these lesions that they could easily be demonstrated by roentgen rays and would appear on the fluoroscopic screen as dancing shadows over the aortic area. By the use of special technique including a small fluoroscopic aperture approximately two inches square, a screen of high intensity with the patient in the slight right anterior oblique position, the shadows can be demonstrated by fluoroscopy. One must accommodate satisfactorily and look through the heart, watching for dark irregular shadows along the oblique line between the apex and base which have a characteristic dancing motion between systole and diastole.

The patient then can be rotated to the left anterior oblique and the aortic differentiated from the mitral calcification. Sosman[13] reports that most of the valves proved to contain calcium at autopsy are demonstrable roentgenoscopically. He considers it by far the most important and valuable finding in differentiating aortic stenosis from other conditions causing left ventricular hypertrophy. He found calcification in the aortic valves in fifty-nine patients by x-ray methods. Several of these came to autopsy and in all of them except one, massive calcium deposits were found in the aortic valve while the exception had calcification in the coronary vessels. He has seen many cases of minimal calcified aortic stenosis come to autopsy when the deposits were overlooked by x-ray study. Reich[8] states that the correct clinical diagnosis can be almost doubled with the use of x-ray.

Diagnosis

A positive diagnosis of aortic stenosis rests ultimately upon the recognition of one or more criteria, the characteristic murmur which is the most significant physical finding when present and the fluoroscopic demonstration of aortic calcification. Although the presence of a thrill is significant, to demand its presence for a diagnosis would lead to failure to recognize aortic stenosis in the majority of cases, especially in the earlier ones.

A combination of the above absolute findings with a negative Wassermann, negative history of lues, and absent peripheral signs will rule out aortic insufficiency. Calcified aortic stenosis is very frequently confused with arteriosclerotic heart disease where an electrocardiogram may be of no help. The murmur and x-ray findings are all that is necessary to differentiate.

The clinical diagnosis can be made in mild cases with less accuracy. Willius reports that a diagnosis of mild aortic stenosis, grade I or grade II intensity can be made on the bases of a rough, moderately loud systolic murmur over the aortic area with poor transmission, absent thrill, unaltered A_2 an aortic diastolic murmur present only rarely, peripheral pulse and pulse pressure unaltered, frequent demonstration of small amount of calcium by special roentgenoscopic technique, and either no or slight left axis deviation on electrocardiograms.

Course and Prognosis

The patient with calcific aortic stenosis is well for a long time before the onset of symptoms. One of the striking features of this disease is the ability of the heart to compensate for this gradually developing lesion over a period of many years without showing clinical evidence of myocardial insufficiency. These hearts hypertrophy to enormous proportions before decompensating. The lesion is often picked up at an insurance examination or on a routine checkup and in a few cases is not even suspected during life, only to be found at the autopsy after death from other causes. The patient may have known of the existence of an aortic stenosis with a typical murmur for many years and feel well all this time, but when he fails, he fails rapidly, death not being far off, usually not more than one or two years at the most. Contrast this to a mitral stenosis where the individual's life expectancy is several years reduced and where there is decompensation from which the patient will recover and fail repeatedly over a period of many years. The same is true of tricuspid stenosis.

A study of the course of the disease was made by following the signs and symptoms and physical findings over a number of years before death at intervals, of five or more years, two to five years, six months to

two years, one to six months, and the last month before death.

A small number of the patients (seven or 39 per cent) gave a history of at least one symptom referable to the heart two years or more preceding death. Most of these cases had some exertional dyspnea indicating that there were transient episodes of left heart failure with exertion; transient, because the pulmonary congestion was overcome by the unusual ability of the heart to compensate through further dilatation and hypertrophy. Finally, the interval is reached between six months and two years when the ratio of symptoms to nonsymptoms is almost reversed. From that point on 72 per cent of the patients had heart complaints which were chiefly those of left heart failure until shortly before death when symptoms and signs of complete heart failure were apparent in a few cases.

A study of the progression of physical findings was handicapped by the small number of patients with previous hospital admissions covering a number of years before death, and, as a consequence, the results at these longer intervals will not be of any great statistical significance, but will be mentioned, nonetheless.

Records of five years or more before death are available in two cases. One followed a course characteristic of the disease. The patient was a female, fifty-five years of age at the time seen about seven years before death. At this time she was admitted because of a chronic cholecystitis and cholelithiasis. There were no symptoms referable to the heart, but the patient was found to have a heart enlarged 12 cm. to the left from the midline and a harsh systolic aortic murmur transmitted into the great vessels of the neck. When seen next, seven years later, and just twelve hours before death, she was in a state of acute cardiac decompensation giving a history of increasing exertional dyspnea for only one year.

The course as followed through physical findings proves to be quite similar to that mentioned above with regard to signs and symptoms. In every record examined, irrespective of the time before death, there was at least one physical finding, usually either a heart murmur or cardiac enlargement or a combination. It is of striking significance that the characteristic murmur of aortic stenosis was heard in 60 to 72 per cent of cases where records for less than five years before death were available, this percentage remaining almost constant for any given interval. Physical evidence of left heart failure, temporary or otherwise, was found at all times in the bare majority of cases, while evidence of complete heart failure was present only terminally and then only in a small number.

TABLE VII. DURATION OF PHYSICAL FINDINGS

	5 years or more		2-5 years		6 mos. to 2 years		1 mo. to 6 mos.		1 mo. or less	
Hospital Records	2		5		10		13		18	
Physical Findings	No.	%	No.	%	No.	%	No.	%	No.	%
Systolic aortic murmur	1	50	3	60	7	70	9	69	13	72
Diastolic aortic murmur			1	20	1	10	1	7	3	16
Systolic apical murmur			3	60	4	40	6	46	7	39
Diastolic apical murmur	1	50	3	60	3	30	4	41	4	22
Systolic Precordial murmur	1	50	2	40	2	20	3	23	4	22
Pulmonary congestion	1	50	3	60	5	50	6	46	13	72
Pleural Effusion									3	16
Hepatomegaly							3	23	4	22
Cardiac Enlargement	2	100	3	60	6	60	8	61	11	61
No findings	0		0		0		0		0	
Positive findings	2		5		10		13		18	

*Percentages on this Table are based on the number of records available at that particular time category.

These clinical findings tend to confirm the generally accepted belief that the symptoms are held in abeyance for many years, but once complete failure occurs the end is near at hand, usually within six months or less; in fact, complete failure seems to be followed so rapidly by death in most cases that physical evidence has become apparent in only a few. The majority of patients with congestive heart failure respond poorly to therapy.

Pathologic Anatomy

A study of the necropsy findings (Table VIII) reveals that calcified aortic stenosis was present in advanced degrees in 100 per cent of the cases as this was the basis for the selection of the cases. Evidence of chronic congestive heart failure in the form of chronic passive congestion of the liver, spleen and kidney and lung with its terminal complications of bronchopneumonia, pulmonary infarcts and acute gastroenterocolitis was present as a moderate to severe degree in all of the cases. It was considered as primarily responsible for death, however, in thirteen or 72 per cent of the cases. Death from other causes was found in five cases and even in these cases aortic stenosis and congestive heart failure may be assumed to have been a factor. These were the result of a coronary thrombosis and myocardial infraction, a coronary embolism from a broken off piece of the calcified valve, a car accident with complicating pneumonia, and two cases following surgery, one a transuretheral resection of the prostate for benign hypertrophy with exsanguination and the other for surgery on an advanced bladder carcinoma. These figures are not similar to those of other authors. Reich[8] found death in only seven of twenty-two cases of aortic stenosis or 32 per cent as explainable by congestive heart failure or pulmonary edema. However, he has six cases of bronchopneumonia as the cause of death. We considered most cases of bronchopneumonia as a terminal event complicating the congestive heart failure which was considered the primary cause. Many authors present much lower figures varying from 30 to 50 per cent but one must keep in mind that their cases of aortic stenosis were not restricted.

Clinical Diognosis

The diagnosis of calcified aortic stenosis was made clinically in 33 per cent of the cases (Table IX). This figure is not meant as adverse criticism of the clinicians of this hospital; as a matter of fact it compares rather favorably with the figures of other institutions. Karsner's study of the figures of the Cleveland City and University Hospitals showed diagnosis of aortic stenosis in thirteen or 23 cases of marked stenosis or an average of 55 per cent. In 33 cases of slight and moderate stenosis a correct diagnosis was made in ten cases or 30 per cent. The chief source of confusion seems to lie in differentiation of arteriosclerotic and hypertensive heart disease from calcific aortic stenosis as the diagnosis of the former was made exclusively in 33 per cent. Granted that this diagnosis was correct in two cases it was made entirely to the exclusion of aortic stenosis. Another source of error was the confusion of aortic stenosis with other valvular disease when none actually existed.

The diagnosis of calcified aortic stenosis is not an easy matter when purely physical signs are used, especially in comparison with other forms of heart disease, e.g., aortic insufficiency and hypertensive heart disease. In the latter conditions accuracy is much greater, thanks to the instruments and diagnostic methods of precision that are available. There is but little question that with the more widespread use of roentgenoscopic procedures the diagnosis of aortic stenosis will reach a higher degree of accuracy.

Therapy

One might well have raised the objection to the necessity of making an accurate diagnosis that it really makes very little difference what diagnosis is made because the treatment employed will be the same for all cases of cardiac decompensation regardless of the cause. This same objection was once raised to diagnosing accurately congenital heart disturbances; however, with the development of surgical means of correcting certain of these anomalies the practical importance of an accurate diagnosis is at once realized.

We are now just entering into an era of great advancement in cardiac surgery. The day may well come in the near future when these aortic lesions as well as other cardiac lesions will be amenable to surgery. Only recently a technique has been devised by Smithy[11] which can be used in the correction of aortic and mitral stenosis. Employing a specially devised valvutome he successfully incised the aortic valves of experimental animals through an aortic approach, later extending the experimental work to an approach through the ventricle and auricles themselves. The culmination was reached when the procedure was performed in human patients with very encouraging results both from a surgical and a clinical standpoint.[10] Certainly, with the realization that selected cases of aortic stenosis will be amenable to surgical correction in the not too distant future, the importance of accurate diagnosis is imperative and must improve over the 33 per cent as found in this series.

TABLE VIII. PATHOLOGIC DIAGNOSIS

	No.	Per Cent
1. Calcified aortic nodular disease, grades III and IV	18	100
2. Chronic passive congestion, congestive heart failure, moderate to severe	18	100
3. Terminal pneumonia	7	39
4. Acute pulmonary edema	5	28
5. Bicuspid aortic valve	3	16
6. Pulmonary infarcts	3	16
7. Hypertensive cardiovascular disease	2	12
8. Coronary arteriosclerosis, Grade IV	1	6
Grade III	0	0
Grade II	5	28
Grade I	8	67
Grade 0	4	22
9. Coronary thrombosis and myocardial infarct, new	1	6
old	1	6
10. Coronary embolism	1	6
11. Old myocardial infarcts	3	16
12. Acute terminal gastroenterocolitis	1	6
13. Benign prostatic hypertrophy	2	12
14. Surgical exsanguination of blood following transurethral resection of prostate for benign hypertrophy	1	6
15. Myelogenous leukemia, early	1	6
16. Carcinoma of bladder	1	6
17. Carcinoma of prostate, early	1	6

TABLE IX. CLINICAL DIAGNOSIS, PRIMARY

1. Hypertensive cardiovascular disease	1	
2. Coronary thrombosis	3	6 (33 %)
3. Arteriosclerosis heart disease	2	
4. Calcified aortic stenosis	4	6 (33 %)
5. Calcified aortic stenosis and mitral disease	2	
6. Rheumatic heart disease, other than aortic stenosis	4	
7. Pneumonia and car accident	1	
8. Benign prostatic hypertrophy and carcinoha of bladder	1	
	18	

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN COTTONWOOD COUNTY

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Thoughts of the early pioneer doctors of Cottonwood County bring to mind the story of the hardships and self-denial of all of the early settlers, and particularly the fatigue and exposure endured by the physicians, who in faithfulness to their professional obligations were on duty at all hours of day and night, in all weathers, traveling over trackless prairies, fording unbridged streams. The history is rich in anecdotes of their courage, resourcefulness and loyalty, under conditions that, viewed from this day of ease in communication and transportation, of wealth of equipment and of diagnostic and therapeutic aids, seem almost incredible. As a rule, it may be said that almost without exception those physicians were men of ability in their day and that they had a high sense of honor. Many a pioneer, during illness of himself or of some one dear in his family, felt that in the doctor's hands there was safety, and had faith that the best that could be done would be accomplished.

Cottonwood County, created by the Legislative Assembly of the Territory of Minnesota on May 29, 1857, was organized officially on July 29, 1870, when the county officers met at Great Bend, long since vanished, which was the first county seat. In the same season the first school of the county was started in that community. Although settlers came early into the county, it was not until 1871 that important development of the region began. The rigors of pioneer life were severe, transportation was extremely difficult, the Civil War took the sturdiest and youngest of the men from farms and businesses, Indian scares in 1862 frightened away many settlers who did not return until several years later, and recurring plagues of grasshoppers for some years were powerful deterrents to settlement. In 1870 the county had a few small hamlets or villages and a total population of 543. In 1871, the first great boom year of the county, came the railroad, which now is part of the Chicago and Northwestern system. On June 20, 1871, the village of Windom, destined to become the county seat, was platted on the east bank of the Des Moines River, near the line of the railroad. In July, when the first locomotive puffed into Windom, the place was ready for business: religious services had been held and social diversion organized; there were a community well, a hardware store and a bakery. That autumn, much wheat was shipped from the new settlement. The county had found itself.

The first physician who practiced his profession in Cottonwood County was Dr. Allen Smith, who arrived in Windom from Ohio on October 10, 1871. After two years in Windom he returned to Ohio, where his death occurred soon afterward.

Other physicians of the county, about some of whom little is known, and about others of whom considerable biographical information has been gleaned, are listed hereafter in alphabetical order.

Biographical Notes

Silas D. Allen (1826-1907) was born in Bradford County, Pennsylvania, on December 1, 1826. His wife, Lucy A. Allen, also was a native of Bradford County.

Dr. Allen obtained his early education in his native place and taught school there for a few years before studying medicine at the University of Michigan at Ann Arbor. Early in 1854, then twenty-eight years old, he decided to try his fortune as a gold miner in California, and on May 29 of that year he took passage on a sailing vessel at New York, en route to San Francisco by way of Cape Horn and the Pacific Coast. He remained in California until November 14, 1855, and was reasonably well paid financially for the hardships and varied experiences he passed through.

On his return from the Coast he settled, in 1856, in northeastern Iowa, near Lansing, and there farmed and practiced medicine for a number of years. Later he and his family moved to Carroll County, Missouri, where they stayed until 1874, when they came to Cottonwood County, Minnesota. The new home was a farm on the Valley Road, a mile from Windom; their first house, in which they lived six years, was built of logs. In 1880 Dr. Allen erected a good frame house, which still stands in 1948.

Always a lover of farming, and especially stockraising, Dr. Allen combined these occupations with the practice of his profession. Calls for his professional services were numerous, and he never failed to respond, day or night, generally going on horseback, which was the most practical and the quickest method in those days. He was a skillful physician, and his wisdom as counselor was much sought in serious cases by other physicians, who had full confidence in his skill and advice.

In September and October, 1875, there was a severe epidemic of diphtheria in the community, during which many were afflicted and thirteen children died. Dr. Allen successfully took care of most of the sick, and what a terrific strain it must have been! Those were anxious and trying days for both parents and physician. Early settlers still living in and near Windom who can remember anything about that epidemic say that the usual treatment then for diptheria was to have the patient gargle with a mixture of vinegar and pepper. In addition, in the care of children, the patient was covered completely with a sheet, and kerosene fumes then were forced under the sheet for the child to breathe. It is told that, under this treatment in some cases, the patients vomited up tube casts of membrane, and recovered.

After the medical practice act of 1883 was passed in Minnesota, Dr. Allen practiced under an exemption certificate.

The doctor was a broad-minded man of strong convictions, ever conscientious, and intolerant only of hypocrisy or graft of any nature. He always took an active interest in social conditions and public affairs, and worked for the betterment of the community. In 1901 Dr. Allen sold his farm and moved into Windom, retiring from active life. A great reader, he owned a splendid library of the best works, and in his later years devoted much of his time to his favorite authors.

Mrs. Allen died in 1902 in Windom. After her death the doctor lived alone most of the time until January, 1907, when he was stricken with an illness that ended in his death on April 4 of that year.

By his generous and sympathetic disposition, the doctor made many friends. He is remembered by many as one who seemed to think of his professional services only in terms of helping suffering humanity. After his death it was

found that his account books showed that thousands of dollars, which he never endeavored to collect, were due him for his work as a physician.

William Hulbert Banks (1874-1947), a native of Cottonwood County, was a son of one of the earliest pioneer settlers of the county. The following letter, written by Dr. Banks' son on December 27, 1947, to Mr. D. L. Keith, editor of the *Cottonwood County Citizen,* and published in that paper, tells the interesting story of the doctor's life:

William Hulbert Banks was born in Lakeside Township on October 14, 1874. His father, William Carr Banks, was one of the original settlers in the county, homesteading at Swan Lake in 1869, farming or residing in Windom until 1910. He hauled food supplies by ox team through blizzards from the rail terminal at St. James to Windom, when the hamlet was down to its last barrel of flour. He survived the grasshoppers to become a charter member of the "Idle Rich" club of court house square.

Bethia Odell Banks, Dr. Banks' mother, came to the county from Wisconsin to teach school and homestead. She was a leader in temperance, woman's suffrage, and educational advancement.

Dr. Banks attended his mother's Oak Grove school at the age of five to increase the school allotment. He graduated from the Wilder Academy and the Keokuk, Iowa, College of Physicians and Surgeons in the class of 1900. He practiced for twenty-one years in Wisconsin and Minnesota, and for twenty-four years at Yakima, Washington.

During one year, 1916-1917, Dr. Banks moved to Windom and conducted medical practice Here he married Miss Bess Gibson and later the family returned to Hudson, Wisconsin.

During his boyhood, Dr. Banks broke prairie sod, speared fish by torchlight at Fish Lake, and raced his horse at the Windom fair. He was a member of the Windom Drum and Bugle Corps of the '80's. With his brother, John, he hunted ducks with a "zulu" musket, the one sighting the gun while the other struck the firing pin. He heard his mother take part in contests and debates in the original opera house. He recalled one Christmas eve when the family set out with the oxen in a blizzard for a program at Bingham Lake and drove for two hours (a distance of two miles). When the oxen stopped on top of a haystack beside their own barn, they unyoked and had their "doin's" at home. He envied his father's experience in 1869 of seeing elk at Swan Lake.

A few days after the James Brothers' bank robbery at Northfield, in September, 1876, his older brother, John, was fishing at the north end of Bingham Lake, when he saw two strangers riding west, north of the lake, keeping away from the beaten trail and farm buildings. Later when the family learned of the robbery, they believed the two strange riders were members of the James gang, crossing Cottonwood County toward the Missouri valley. (Jesse and Frank James eluded capture.)

Dr. John H. Tilford encouraged William H. Banks to study medicine and took him on calls to patients.

Dr. J. F. Scott (now retired at Yakima), who succeeded Dr. Tilford later in the '90's, was the family's doctor. In 1922 he attended William Banks, Sr., at Yakima during his last illness, and cared for Dr. Banks in 1946.

To his own knowledge, Dr. Banks was the first child born in the county to become a physician.

Dr. and Mrs. Banks returned to Windom many times in the past twenty-five years for visits at the home of the Edward McCauley family, renewing old friendships and studying the geography and history of the region. As one more native son of Cottonwood County, he never forgot his Minnesota heritage.

Thomas A. Beach, who is said to have registered in Minnesota as a physician in 1887, was in Windom, Cottonwood County, in 1893.

Theodore Beck, in Windom in 1896, left Minnesota in that year for Ohio, it is believed. Research has not disclosed that he was licensed in Minnesota. A physician of this name was in Pleasant Hill, Ohio, in 1896; in Dayton, Ohio, in 1918.

Le Roy R. Brown (1855-1932) for one year of his forty-six years as a physician in Minnesota practiced in Windom, Cottonwood County, and for one year in Heron Lake, Jackson County.

Born on February 25, 1885, at Mankin, Michigan, Le Roy R. Brown was a son of Reuben J. Brown and Betsy Ann Kingsley Brown, both of whom were descended from veterans of the American Revolution. He was graduated in 1878 from the state normal school of Michigan in Ypsilanti, and thereafter for three years taught school in California. In 1881 he began to "read medicine," as was the custom of the period, and to assist in practice, with Dr. Brekke, of Ann Arbor, Michigan, and in 1882 he matriculated in the medicial department of the University of Michigan for a course of three years. On graduation, in 1885, with a degree of doctor of medicine, he began medical practice in Saint Paul, Minnesota; he was licensed as a physician in Minnesota on October 6, 1886, receiving certificate No. 1276 (R).

In 1887 Le Roy R. Brown was married to Mina Allen at Ann Arbor, Michigan. To this marriage were born three sons and three daughters. Mina Allen Brown died on May 7, 1907.

In 1896 Dr. Brown left Saint Paul for Windom, where he practiced about one year. For the following year he was in Heron Lake. In 1898, on returning to Saint Paul, he served as a medical fellow at the City and County Hospital. For a number of years he was associated with Dr. Schadle in the nose and throat work at the Saint Paul Free Dispensary, and later was in charge of the department. In 1915 he was appointed to the staff of police surgeons of Saint Paul. On his retirement in March, 1928, he estimated that in his years of service he had answered approximately 15,000 emergency ambulance calls. After his retirement he engaged in private practice, with offices in his home.

Dr. Le Roy R. Brown died on November 22, 1932, at the Ancker Hospital, Saint Paul, from cerebral hemorrhage, after an illness of three months. He was survived by two daughters, Mrs. Ralph E. Brewer and Miss Lucia Brown, both of Saint Paul, and a son, John R. Brown, of Kalkaska, Michigan.

Dr. Brown was a member of the Presbyterian Church and of fraternal organizations, among them the Masonic Lodge and the Independent Order of Odd Fellows, in both of which he held office at various times. His funeral was conducted at the Masonic Temple, Saint Paul, under the auspices of the Scottish Rite Masons.

William Thompson De Coster (1874-1945) was for forty-eight years a homeopathic physician in Minnesota, for two years (1899-18901) in Windom, Cottonwood County.

Born at Kingston, Meeker County, Minnesota, on August 25, 1874, he was a son of pioneer settlers of the state, Granville Foster De Coster and Mary A. Hall De Coster, both of whom were natives of Maine. Granville F. De Coster was first a farmer in Meeker County, next was in Watonwan County six years, and was then in Jarvis County. After 1901 he made his home in Winter Haven, Florida, where he died on May 7, 1923; Mrs. G. F. De Coster died in March, 1931.

William T. De Coster received his early academic education in the schools of Saint Paul. In 1897 he was graduated with the degree of doctor of medicine from the University of Minnesota College of Homeopathic Medicine and Surgery; he was licensed in Minnesota in that year, and thereafter practiced his profession continuously. For about two years after gradu-

ation he was in South Saint Paul, where in addition to conducting a private practice he was a contract surgeon for the Swift Packing Company. In February, 1897, he settled in Windom, Cottonwood County, where he practiced for two years. Early in 1901 he joined Dr. Walker in operating a hospital at Worthington; later, the two physicians established a hospital at Windom and in 1910 another at St. James, and until 1914 conducted the three institutions. Dr. De Coster then had a hospital in Madelia for two years. In 1915 he settled in Mankato, where he opened his private hospital. It is said that in this period he had a hospital in Rochester also.

Dr. De Coster was a public-spirited man, an independent thinker in politics, and a member of numerous fraternal organizations and of the Mankato Golf Club. He was deeply interested in the history and beauty of Minnesota, and his favorite hobby was visiting interesting localities in all sections of the state. He died in Mankato from coronary thrombosis on March 26, 1945. He was unmarried.

Noah Diamantenberg (1864-1932) was born Noa Dymenberg at Czernowitz, Austria, on March 15, 1864. When he came to America is not known. He was graduated from the Saint Paul College of Medicine with the degree of doctor of medicine in 1866 and was licensed as a physician in Minnesota on March 30 of that year, receiving certificate No. 1174 (R). He was for a time, in 1886, in Cottonwood County. Records of the American Medical Association disclose that he was licensed in Iowa in 1888, in Colorado in 1889, and in Illinois, in 1890. He was a resident of Minturn, Colorado, and was a member of the Colorado State Medical Society. His death occurred at Minturn on December 24, 1932, when he was struck by a train.

Charles A. Greene (1845-1910) was born in Rhode Island. He was graduated from the medical department of the University of Buffalo (New York) in 1873 and for two years thereafter practiced medicine in New York State. In 1875 he came to eastern Minnesota, where he engaged in practice some three years. The *Official Register of Physicians* of Minnesota for 1883-1890 states that he was licensed in the state on December 31, 1883; he held certificate No. 664 (R).

In 1887 Dr. Greene settled in Windom, Cottonwood County, where for twenty-three years he was a valued member of the community and an honored physician. Skilled in medicine and surgery, kindly and full of fun, courageous in the face of hazards, he never refused a call for his help, no matter how severe the weather or impassable the roads.

Dr. Greene was an active Mason, and was a member of the Grand Army of the Republic, a veteran of the Civil War, having served in Company A, Thirteenth Wisconsin Volunteers Regiment of Infantry from 1861 to 1866. When he died in Windom on November 10, 1910, he was survived by his wife and his daughter, Nellie, both of Windom, and by two brothers, John E. Greene, a lawyer in Minot, North Dakota, and Edward Greene, a professor in Washington, D. C.

Horace E. Harmon (1873-1913) was for twelve years a respected physician of Jeffers, Cottonwood County.

The following notes are based on an obituary that appeared in the *Jeffers Review* of January 30, 1913:

Horace E. Harmon was born at Faribault, Minnesota, on July 27, 1873. In 1879 he moved with his parents to South Dakota; in 1893 he was graduated from the South Dakota State College at Brookings. After four years of study of medicine at the University of Minnesota, he practiced medicine at Bryant, South Dakota, for one year. He next took a year's postgraduate work (1899) in a Minneapolis hospital. In 1900 Dr. Harmon settled in Jeffers; his residence was broken only by an absence of six months that year to take the degree of doctor of medicine at the University of Iowa, in Iowa City.

In October, 1902, Horace E. Harmon was married to Cora B. Potter. Mrs. Harmon died on April 23, 1908. Dr. Harmon was married on December 27, 1910, to Erna Luck. The only child of the first marriage, Lyle, died on March 24, 1912; the only child of the second marriage, Victor Edwin, died on September 10, 1912.

When Dr. Harmon died at Jeffers on January 26, 1913, after a week's illness from pneumonia, he was survived by his wife; his parents, Mr. and Mrs. T. Harmon, of De Smet, South Dakota; two brothers, Lyle, of De Smet, and Timothy, of Sherburn, Minnesota; and two sisters, Mrs. Michael Kelly and Mrs. Kittie Sturgeon, both of Dickinson, North Dakota.

His funeral services were held at Jeffers in the presence of hundreds who esteemed him; burial was at Windom. The *Jeffers Review* said: "During Dr. Harmon's twelve years of practicing medicine at Jeffers, he has made many friends throughout the entire county. No night was too stormy, no roads were too bad for him to make a call and administer to the sick or wounded. . . . He was a good doctor. . . . Dr. A. J. Moe of Heron Lake Hospital says: 'He was an ideal practitioner; it seems he was a natural born physician, and he had a fine success.' He was a kind and freehearted man, always standing for correctness and principle. He was a faithful friend to all, and we regret our inability to compose a better tribute to his memory."

Johannes K. Moen (1867-1929) was born in Telemark, Norway, on March 3, 1867. He immigrated to the United States at the age of eighteen years and settled in Red Wing, Minnesota, where he attended the Seminary. He later enrolled in the medical department of the University of Minnesota, from which he was graduated in 1893; he was licensed in the state that year.

After his graduation Dr. Moen set up practice in Windom, Minnesota, where he remained until 1908. He was coroner and health officer in Windom for several years. About this time he suffered the loss of his library and office equipment in a large fire.

Dr. Moen purchased his first automobile, an Oldsmobile, in 1901. It was a doubtful blessing, because he experienced much trouble making his calls in it, owing to bad roads; most of the time when he used his car in the country, he had to get farmers to pull him to town with horses. During the winter of 1899, driving his team, he had some especially bad trips on professional calls that he made to Westbrook, thirty miles away, and to Storden, twenty miles. Because of blizzards, it was not unusual in that period for him to be away from home two or three days at a time.

In 1908 Dr. Moen spent some months in Europe for postgraduate study, and on his return in 1909 he began his long medical practice in Minneapolis. For several years he was head physician of the Scandinavian-American Fraternity in Minneapolis. He was a staunch Democrat, a Mason, and an active member of the Sons of Norway. He had literary talent in both prose and poetry, most of which he wrote in Norwegian. Among his many interests and hobbies were fishing, which he particularly enjoyed, and botany; he had an interesting garden of medicinal plants.

Dr. Moen died in Minneapolis in 1929. Surviving in 1948 were his wife, in Minneapolis, one daughter and two sons. One of the sons, Dr. Johannes K. Moen, was in medical practice in Minneapolis.

Joseph Boardman Noble (1859-1947), a graduate of Rush Medical College, Chicago, in 1886, began practice in Windom, Cottonwood County, Minnesota,

the same year. He was licensed in the state, as of Tower, on May 3, 1886, receiving certificate No. 1185(R). After two years in Cottonwood County Dr. Noble removed, or perhaps returned, to Tower, where he remained until about 1900; in this period he was owner of a hospital in Tower and was a member of the St. Louis County Medical Society.

From 1900 until his death at the age of eighty-five years, Dr. Noble was established in Waukesha, Wisconsin. There is record that he was a member and past president of the Waukesha Medical Society and member of the Wisconsin State Medical Society. He was appointed city physician of Waukesha in 1902, was for many years medical examiner for several large national insurance companies, physician to the Wisconsin Industrial School for Boys, for twenty-five years district surgeon to the Chicago and Northwestern Railway Company, and was on the staff of the Waukesha Memorial Hospital. Active in local civic affairs, he served as member of the library board and as alderman.

Dr. Noble died at the Waukesha Memorial Hospital on May 5, 1944, from cerebral arteriosclerosis.

Charles Wilbur (sometimes spelled **Wilbor**) **Ray,** who was born in 1856, was a graduate of the Bennett College of Eclectic Medicine and Surgery, of Chicago, in 1885. On May 26, 1887, then in St. Claire, he received Minnesota state license No. 1414 (E). In the next twenty-two years he practiced medicine in various localities in the state, in the following order: St. Claire, Blue Earth County; Owatonna, Steele County; Canton, Fillmore County; and Nicollet, Nicollet County. In 1900, after a period of study in the East, he moved with his family to California. It is said that he was again in Nicollet for several years, about 1907-1909. He returned to California, where he died in 1912 in Los Angeles.

A fuller account of Dr. Ray's life appeared in 1947 in *Notes on the History of Medicine in Fillmore County Prior to 1900* (Guthrey), in MINNESOTA MEDICINE.

James Fred Scott, born in 1873, was graduated in medicine from McGill University, Montreal, in 1899, and in that year began the practice of medicine in Windom, Minnesota. In 1900, Dr. Scott was in Mankato. In 1905, a resident of North Yakima, Washington, he was licensed in Washington. He was in practice in North Yakima as late as 1947.

Allen Smith, the first practicing physician of Cottonwood County, arrived in Windom from Ohio, as stated earlier, on October 10, 1871. Two years later he returned to Ohio, where he died not long after his return to the state.

(To be continued in the September issue)

President's Letter

WHY AN AUXILIARY?

During the recent war, more than ever before, we saw eloquent proof that a woman's auxiliary can be a truly social service group. It can, if fully utilized, be a powerful force for the advancement of the aims of the parent organization and for the benefit of society as a whole—plainly and simply, an instrument *for getting things done.*

We do not need to count the bandages that were rolled, the sandwiches and coffee, and home-like hospitality that were extended to our servicemen, the fund drives, the scrap drives, the conservation drives, and the hours of hard work that went into the hundreds of major and minor projects. No one can put a price on the value of the job that women's auxiliaries all over the country did toward the winning of the war—even to the extent of marching to the front and serving in the nursing corps and in the auxiliary units of the army and navy.

All of these valued services were performed in greater or lesser degree by members of our own medical auxiliary, but it behooves us to recognize that their peacetime service is no less significant and even more valuable to us in discharging our professional obligations. As individuals, we look upon our wives as helpful companions and valuable assets. The old quip that a wife is both a necessity and a luxury represents the two attitudes which we may take. We may regard our woman's organization as "just something to put up with—not much good, but harmless," or, if we are alert to its possibilities, we can delegate to it certain responsibilities for carrying out projects for which it is particularly well adapted and which in many cases we cannot undertake for ourselves.

We readily recognize the value of women as wives and mothers in the rôle of homemaker. But with their auxiliary group they are in a peculiarly advantageous position to strengthen our relationships with the layman and to interpret our ideals and aims to the public.

We should welcome this assistance; for surely certain aspects of our public relations are not to be slighted; we cannot afford to overlook the liaison value of our wives. There are instances where they can aid us immeasurably, where they can speak for us—where we cannot speak for ourselves—as in the field of public health education. They can, as a group, sponsor many worthwhile projects which have as their ultimate aim the spread of authentic health information, and they can conduct these activities without fear of criticism. The code of medical ethics does not forbid doctors' wives speaking in behalf of the advantages which adequate medical attention has over home remedies, self-medication and patent medicines.

It is only natural, furthermore, that the wife of a man who is respected in the community will also share some of that respect. It then follows that she should have a share in some of his community responsibilities. Among them would certainly be to inform and enlighten in matters of health.

Thus, in these times when the medical profession is engaged in a serious fight to preserve freedom of enterprise for itself and the world, we welcome the thoughtful, conscientious effort of the Woman's Auxiliary in our behalf. A bright future for service to humanity is before this group, and we are proud that they are willing to accept this challenge.



President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

CORRELATION OF PRIVATE AND TAX-SUPPORTED HEALTH ORGANIZATIONS

THE interest of the public in health matters is manifest in its generous support of the numerous agencies devoted to the problems of tuberculosis, infantile paralysis, heart disease, cancer, rheumatic fever, high blood pressure, crippled children and adults, et cetera. We can foresee the need of a better co-ordination between the activities of these voluntary organizations and those supported by public expenditure of tax funds, notably by the United States Public Health Service.

Antituberculosis activities, supported by the yearly purchase of Christmas seals, were the first in the field, and the outstanding reduction in tuberculosis is partly a result of the publicity regarding tuberculosis prevention and health matters which have been this organization's main function and in large measure the result of the establishment of sanatoria at public expense. There has been no overlapping of activities in this field.

The response to the appeal for funds for research in poliomyelitis and the relief of its victims has furnished millions of dollars yearly for the National Foundation for Infantile Paralysis. The predilection of the disease for children has provided an emotional appeal which has resulted in the raising of funds out of proportion to the number of its victims. The addition of a second agency in the same field, the Kenny Institute, has increased this disproportion. We read in the Washington Report on the Medical Sciences of June 14, 1948, that a catch-all health bill (H.R. 6732) failed to pass in the last days of Congress, only because a committee report which was supposed to accompany the bill could not be found when the bill was called upon the floor of the House. The bill would have given the Surgeon General of the Public Health Service broad powers to establish research institutions for poliomyelitis and such other diseases as he might deem necessary, and furthermore to give financial assistance to existing poliomyelitis agencies.

The high toll of heart disease has aroused growing concern in various quarters. The Life Insurance Medical Research Fund, established in December, 1945, by the life insurance companies, spent a million and a quarter dollars in support of some eighty-nine research programs and fellowships in 1946 and 1947. The American Foundation for High Blood Pressure, with headquarters in Cleveland, has just announced the allocation of $75,000 for research in hypertension, arteriosclerosis, and associated conditions. The Variety Club, with headquarters in Minneapolis, has been most generous in its contributions to the study and care of rheumatic and other heart diseases. In June, Congress passed the National Heart Act aimed to curb cardiovascular disease by stimulating research, professional training and public control measures, which promises to lead up to a program which will be the largest ever undertaken by the U. S. Public Health Service. Approximately 3 million dollars have been appropriated to get the campaign started and to establish a National Heart Institute to be housed in the 40 million dollar clinical research center to be erected at Bethesda, Maryland. It is expected that eventually some $15,500,000 will be spent on the program annually. The bill was backed by the National Heart Committee and the American Heart Association. The American Heart Association and its affiliates now plan to conduct an annual campaign to raise funds from the public to be used partly for research and partly for public and professional education and improvement of facilities for diagnosis and treatment of heart disease. While such uses do not duplicate those of the Life Insurance Medical Research Fund, the question arises as to whether the new USPHS activities will not prove to be a duplication.

Cancer also presents a serious medical problem. The American Cancer Society has been conducting drives each year for the raising of funds to combat this disease and in its last campaign raised $12,111,000, some $284,000 having been raised in Minnesota. Last year Congress appropriated 14 million dollars for cancer work, $2,303,000

having been allocated for the construction of clinical research and laboratory facilities. The House included in this bill an appropriation of 8 million more to provide facilities and establish training projects relating to cancer. Research in cancer is to be included in the 40 million dollar combined hospital and research building being erected in Bethesda, Maryland. Much of this money will be spent by the National Cancer Institute, part by the U. S. Public Health Service in cancer research and grants-in-aid to other institutions and to individuals for cancer research.

Also passed by the last Congress was a bill providing for 2 million dollars for a National Institute of Dental Research at Bethesda, Maryland.

Each year the National Society for Crippled Children and Adults, Inc., puts on a campaign for raising funds for this worthy object.

The Medical Economics section in this issue of Minnesota Medicine contains information regarding a bill to establish a National Science Foundation to initiate and support basic science research, one of the four divisions of which would be medical research. That this bill had considerable backing is attested by the fact that it was passed by Congress but vetoed by the President. Will this bill be passed by the next Congress? If so, will it not duplicate the research provisions of the National Heart Act mentioned above?

The Federal government is apparently entering the medical research field in a big way by subsidizing such research in the medical schools and by establishing its own medical research institutions. The medical school of the University of Minnesota is one of seven medical schools in the country which receive over a half million dollars yearly in research and educational grants from the various divisions of the U. S. Public Health Service. Perhaps, with the present dearth of contributions for medical research from private sources, such federal assistance is necessary. It is favored by certain members of the profession.

It seems to be a general belief that if enough millions of dollars are available for medical research, the problems will be solved. History does not confirm this belief. The outstanding medical discoveries so far have not been dependent on millions of dollars but rather on a comparatively few medical research workers. Scientists with the qualities essential for research are few and far between, and funds can be easily dissipated in the name of research, if their expenditure is not judiciously supervised.

The status of medical research presents a confused picture and raises several questions. Are the funds raised through voluntary contributions to the various national organizations sufficient for carrying on adequate research? If not, is governmental subsidy necessary? If so, should participation by the government be limited to subsidy of existing research institutes, or should the government also carry on its own research programs? If the government is going to appropriate millions of the taxpayers' money for medical research, should the public be asked to contribute additional millions for the same purpose?

The demands being made on individuals and corporations for contributions, not only to societies involving medical activities but also to the great array of other charitable and philanthropic activities, have become well nigh unbearable. Individuals are not in a position to evaluate the many demands made for contributions. The various Community Chests have helped to solve the local charity problem but are not of assistance when it comes to the many organizations of national scope.

According to an editorial in the *New England Medical Journal* of June 24, 1948, a study is on foot to analyze the 88 million dollars spent in the vicinity of Boston in 1946 by tax-supported and voluntary agencies. Presumably this study will result in a clarification of the subject. Similar studies on a state-wide and national basis would be of great value.

RED CROSS BLOOD BANKS

At the close of World War II, a surplus of some 2 million pints of blood plasma was returned to the Red Cross. This was distributed to the various State Departments of Health and redistributed gratis to the various hospitals. The supply has been about exhausted.

The use of blood and its derivatives has greatly increased in recent years. Their value is by no means restricted to war needs, although in case of an atomic war, they will be invaluable. Their cost to patients and the difficulty in keeping blood banks supplied have proven serious problems in the past. The Red Cross, therefore, seriously considered the advisability of continuing its blood program following the war, and after

numerous regional meetings of Red Cross representatives and almost unanimous agreement, the Board of Governors of the American Red Cross gave its approval to the undertaking. Regional blood banks will be established all over the country providing the approval and co-operation of the local medical societies are obtained. Blood centers will collect the blood from volunteer donors and will finance the costs from Red Cross funds. It is anticipated that the project will cost from 3 to 5 million dollars the first year and probably more in succeeding years. Blood and its derivatives will be furnished without charge to all hospitals—civilian and governmental—for all patients irrespective of their financial status. A reasonable charge for administration will be allowed hospitals and physicians.

Already several Red Cross blood centers are in operation. Saint Paul is to have one of the first ten. With the approval and co-operation of the Ramsey County Medical Society, plans are under way to establish a center at 91 East Kellogg Boulevard near the present Red Cross headquarters. It is expected that operations will begin about November 1, 1948, for supplying hospitals in Ramsey County and its environs.

The Red Cross blood bank program requires the wholehearted support of the public and medical profession, if it is to be successful. In keeping with all other activities of the American Red Cross, the program is a philanthropic one. The public will be asked to donate blood in peacetime, as it did during the war, so that blood may be obtainable in sufficient quantities for the saving of lives. The problem of the great cost of blood transfusions is to be eliminated.

The program has received the approval of the AMA with the understanding that the establishment of blood banks shall be with the approval of the local medical society, and any difference of opinion as to the establishment or operation of a blood bank shall be arbitrated at state levels by joint committees from the state medical society and the American Red Cross. On a national level, the House of Delegates of the AMA, at its meeting in January, 1948, appointed a special committee to work with the physicians comprising the Advisory Committee of the American Red Cross. The two committees will continue to work together in this philanthropic venture.

As the undertaking is a long-term proposition and will require several years to reach full operation, it is urged that present blood banks other than Red Cross continue to function, with the idea that many may be taken over eventually by the Red Cross.

AMERICAN HOSPITALS

Almost 18 million Americans were admitted into the 6,173 hospitals of the United States in 1947, according to the 1948 American Hospital Directory compiled and published by the American Hospital Association. This represents an average of one of every eight Americans receiving hospital care.

Approximately 16 million patients, two million more than in 1946, were admitted to general hospitals during the year, the Directory reports. In addition, 40 million hospital visits were made by outpatients, those needing special tests or treatments without bed care.

The average cost of caring for a patient for one day in a general hospital rose from $9.39 to $11.09 in the year 1946-1947, according to the Directory. Yet the average income from patients was $9.71, leaving a daily deficit of $1.38 per patient to be made up through voluntary contributions and gifts from the public.

Part of the $2,354,344,000 expended by hospitals in 1947 was for the salaries of the 79 fulltime employes serving every 100 patients in all types of hospitals, the Directory states. General hospitals had approximately 151 employes for every 100 patients to maintain prevailing high standards of patient care. Hospitals spent about 400 million dollars more in 1947 than in 1946, because of higher wages, higher prices, and expanded services.

The average patient going to a general hospital in 1947 stayed for only eight days, as compared with 9.1 days in 1946, the figures show. This reflects the spreading practice of entering hospitals in earlier stages of illness, possible for increasing numbers of people through Blue Cross and other prepayment plans, as well as wider recognition of the value of hospitals, improved treatment methods, and early ambulation.

Hospitals in 1947 had total assets of approximately six billion dollars, which is more than $42 for every man, woman and child in the United States. Of that amount, general hospitals' plant valuation represents almost three and a half billion dollars, an average of $7,500 per bed.

"Ten years ago, in 1937, 9,221,517 patients were admitted to hospitals," George Bugbee, executive director of the American Hospital Association, reported. "During this ten-year span, hospital admissions have increased almost 100 per cent.

"The facts revealed by the Association's survey dramatically illustrate the increased recognition of the place of hospitals in the nation's health and welfare."

A GUIDE FOR PUBLIC HEALTH NURSING AGENCIES SEEKING TO ESTABLISH POLICIES AND STANDING ORDERS

(June, 1948, Revision—Recommended by the Committee on Public Health Nursing and approved by the House of Delegates, Minnesota State Medical Association)

Local public health nursing practices must be consistent with the medical practices of the community. In recognition of this fact and in the interests of the public welfare, the Minnesota State Medical Association, the Minnesota State Organization for Public Health Nursing and the Division of Public Health Nursing of the Minnesota Department of Health have jointly agreed upon certain minimum policies and standing instructions involving nursing procedures. They are herewith submitted as a basis for guidance of organized public health nursing agencies. It is intended that these minimum policies and instructions will be found sufficiently flexible to meet various local needs.

Agency Policies

1. An agency employing public health nurses should have its basic program and contemplated changes approved by the physicians in the community.

2. The nurse emphasizes the importance of medical care, but she does not recommend the selection of any one individual physician. Except as provided for in policy 10, she gives bedside nursing care and health instruction only under the direction of a licensed physician. Public health nurses working under the direction of local physicians may give and read various diagnostic tests provided approval has been given by the physicians of the community. Likewise, public health nurses may administer immunizing agents, provided they have received specific written authorization or direction for such procedure from the physicians of the community.

3. In special cases of economic need the public health nurses, after consultation and in co-operation with the family physician, may refer patients to the health facilities provided by public and private agencies.

4. The establishment of clinics or other health activities which involve medical service shall be undertaken only upon the approval of the County or District Medical Society, or by the physicians in the community.

5. Records of nursing care should be kept on file by the nurse. The nurse should make a written report to the physician or agency whose patient she has contacted. Such report may be given to the patient to take to the physician, or may be delivered directly to the physician.

6. Every public health nurse should understand and support the state and local health laws and regulations and keep in direct contact with the local and state health departments.

7. Every nurse engaged in public health nursing should become approved by the Committee on Certification, for which provision has been made in Section 145.10, Minnesota State Health Laws and Regulations.

8. It is suggested that all public health nurses, at the time of employment and periodically as requested by the employing agency or the State Board of Health, present a satisfactory personal health record which should include recent smallpox vaccination, evidence of immunity to diphtheria, and freedom from active tuberculosis, as determined by tuberculin tests and/or x-ray pictures of the chest, and other procedures as indicated.

9. Upon consent of the family physician, public health nursing agencies may assign simple nursing duties to persons who have had limited training for such work. Such persons shall receive instruction and supervision for their assignment from the public health nursing agency.

10. The training of public health nurses is carried out exclusively as a collateral service to the philosophies and practices of physicians and surgeons. Therefore, except under highly unusual circumstances, public health nurses should not be expected to answer to the directions of persons other than licensed physicians and surgeons. Provided, however, that public health nurses may carry out nursing functions under the direction of other licensed health practitioners insofar as the practices of the latter, in medical and surgical fields, are within the limits of their licensure, and insofar as such orders may be compatible with the training and experience of public health nurses to perform.

Standing Instructions for Care or Service of Patients

The content of health education to be taught by the public health nurse in the home, the school or the health center, and the quality and quantity of nursing care for sick persons, either under or pending medical direction, are matters of joint concern to the physician and nurse. The following recommendations are offered to nursing agencies as a guide for the establishment of standing orders to the nurse in her administration of nursing care, treatment and medication in those emergencies where no physician is in attendance or when orders have not been left by the attending physician or when the nurse is unable to reach the physician for orders. Before adoption by an agency, all such standing orders should be approved by local physicians.

Emergencies and Accidents—All nurses are expected to be familiar with the techniques adopted by the American Red Cross for first aid treatment and injuries, and in caring for such conditions she will limit herself to these accepted procedures. In the event of a severe accident, immediate medical care should be secured by calling the nearest physician or hospital if it is not possible to locate the family physician; and if the patient is a minor, the nurse should communicate with the parent or guardian immediately.

Communicable Disease Control—The control of communicable diseases is the responsibility, not only of the public health nurse and the official agency, but is also the concern of the medical profession and general populace. If communicable disease is suspected, the nurse should explain to the family the elementary principles of isolation, concurrent and terminal disinfection and such other measures which will aid in preventing the spread of dis-

ease. (See "Home Isolation Procedures," Manual for Public Health Nurses, Minnesota Department of Health.)

If the patient is attending school, the school official should be notified in writing in order that contacts of the patient may be properly observed. The health officers of the sanitary districts in which the school is located and in which the child resides should be notified of the occurrence of suspected communicable disease, as provided by Regulation 318 of the Minnesota State Health Laws and Regulations. The nurse is expected to make the patient as comfortable as possible and to isolate him from all other persons. Any of the following symptoms shall be considered sufficient reason for such isolation:

Fever 100° or more	Sore throat
Coryza	Vomiting
Rash	Inflamed eyelids
Running ears	Pediculosis
Skin lesions suggesting scabies or impetigo	

In aiding physicians in the control of preventable diseases, public health nurses are expected to co-operate with the local health officer and to follow the Regulations of the State Board of Health.

The nurse should teach families that immunizations are best done before the end of the first year of life, and thereafter repeated at the discretion of the physician. Group immunization programs should be conducted under the auspices or with the approval of a local medical society, which may secure available biologics from the Minnesota Department of Health. The nurse's contribution to such programs consists of preliminary education of the community, making the necessary arrangements for carrying through the programs, assisting the physicians when the immunizations are being performed, summarizing reports, and keeping local records of immunization.

Tuberculosis Control—Infectious and potentially infectious cases (active or with tubercle bacilli in sputum) preferably should be isolated at a sanatorium immediately following establishment of the diagnosis and procurement of such recommendation from the attending physician or health officer. Such cases, while awaiting admission to the sanatorium, should be completely isolated at home. (See communicable disease isolation procedure in Public Health Nursing Manual supplied by the Minnesota Department of Health.) Special attention should be given to adequate terminal disinfection after the patient has left the household. Hospitalization should also be advised for other forms of tuberculosis on the approval of physician. Medical examinations, including tuberculin tests and x-ray pictures, should be urged for all members of the family and other close contacts of tuberculosis cases. Where local medical society approval is had, the Tuberculosis Control Officer of the State Board of Health can arrange for mass x-ray surveys of a community.

Syphilis and Gonorrhea Control—As problems in relation to syphilis and gonorrhea are encountered or brought to the attention of public health nurses, all available information regarding these problems should be referred to the Section of Preventable Diseases, Minnesota Department of Health, for consultation and advice regarding future responsibility of the nurse. When cases are known to be under medical care, problems relating to them should first be discussed with the attending physician.

Public health nurses should always bear in mind that information relating to venereal disease should be kept confidential. (See Regulation 2510, Minnesota State Health Laws and Regulations.)

Health of Mothers—The public health nurse's work with mothers and infants is an important part of public health service. She should secure standing orders from individual physicians for treatment and nursing procedure to be carried out for these individuals.

In working with expectant mothers the aims should be to bring the women under early and continuous medical care; to teach the elements of prenatal hygiene; and to carry out nursing care or treatments ordered by the physician. Specific help which public health nurses may give to mothers includes: help arrange for delivery care for the mother and immediate care for the new baby; demonstrate the preparation of sterile supplies when a home delivery is planned; if possible, help arrange to have a registered nurse present during delivery when home confinement is anticipated. They give bed baths and perineal cleansing (demonstrate to attendant). They give treatments ordered by the physician (demonstrate to attendant). The nurses emphasize the value of rest and other aspects of hygiene during the involution period and the value of the postpartum medical checkup. In the event of postpartum hemorrhage, nurses give emergency care—send for the physician, apply gentle massage to the uterus, keep the patient quiet and warm, and carry out the measures recommended for the treatment of shock.

A most important phase of the maternal care is instruction in the value of breast feeding for the baby with its attendant physical and emotional preparation of the mother for a successful breast feeding experience. Infant feeding schedules shall be determined by the attending physician.

Health of Infants and Young Children—A most important phase of public health nursing is instruction in care, feeding and immunization of infants. Every effort should be made to contact the mother of the new infant within forty-eight hours after birth in the home or baby's return from the hospital.

The definite decline in breast feeding challenges the public health nurse to encourage mothers to nurse their infants. The nurse must be familiar with the various techniques involved. She must ascertain from the physician that there are no contra-indications.

The prophylactic protection of the baby's eyes and registration of birth as required by state law is the nurse's responsibility when there is no doctor in attendance.

The birth of a premature infant is an emergency in which the public health nurse must be prepared to function under the direction of the attending physician. A definite prearranged program of co-operation between the physician and the public health nursing service will enhance this program. The nurse's contribution of aid and instruction in maintaining body temperature, feeding

techniques, isolation and other nursing care can be invaluable.

The nurse should concern herself with guiding parents of preschool children in habit training, adequate nutrition, good hygiene and immunizations. Close co-operation should prevail between nurses and organizations such as the Congress of Parents and Teachers, American Legion Auxiliaries and others particularly interested in promoting such special health programs as health examinations, child health conferences, dental health projects, etc., for the preschool child.

Health of School Children—The public health nurse in school health work is usually under the immediate direction of the school administrator. In addition, the Nursing Advisory Committee or the School Health Council, each with medical, dental and lay representation, helps guide the service. The nurse consults with parents on problems of child health and environment and guides parents to other sources of aid which may be needed. The nurse co-operates with the school staff, parents, physicians and dentists in arranging for and conducting health examinations in such a manner that the examinations become an educational experience for all participants.

The school nurse aids in the control of communicable disease by helping parents and teachers recognize conditions for which the child should be isolated. Regulation 318 of the State Board of Health Laws and Regulations provides for reporting children who are ill to the school physician for medical examination. On the other hand, where there is no school physician "it shall be the duty of the teacher or head of the school to exclude from school all pupils, who, in his opinion, show signs of a communicable disease." A nurse may perform these duties when so directed by the school physician or the health officer.

Morbidity—Nursing service rendered by public health nurses to patients ill from any cause is included under this category. The public health nurse must make every effort to keep the physician informed of services she has given to the patient and progress she has observed. Except in services where the policies include bedside nursing, the public health nurse cannot be expected to give continuous bedside care to an individual: first, because of the need for equitable distribution of all phases of a generalized service to all sections of the community; and second, because of the possibility of disrupting the balance of a generalized program. However, where medical and hospital personnel are reduced, the public health nurse working under medical direction may render care to the sick in their homes for demonstration and teaching purposes, thus giving vital assistance to physicians as well as improving the care of the patient.

Whenever the public health nursing agency has assigned nursing duties to an auxiliary worker, a public health nurse will visit the case frequently enough to know that treatment and care are given as ordered by the physician.

It is generally accepted that the nurse's first morbidity visit may be made without there being or before there is a physician in attendance. Standing orders should include definite regulations regarding subsequent visits as well as policies to guide the nurse on the first visit. At the first call every effort should be made to have the patient contact the physician of his choice. The physician will then give orders to the nurse for subsequent visits. Written or telephoned reports to the physician are desirable, both for the first and subsequent visits. Ordinarily, repeat home visits, when there is no physician in attendance, are made chiefly to urge medical supervision and to secure diagnostic information to be reported to the attending physician or health officer.

Crippled Children's Services—The State Service for Crippled Children requires full co-operation of all interested local agencies to fulfill its functions. The prevention and correction of physical handicaps due to bodily defects needs supervision over long periods of time. The nurse works with the individual physicians in the care and supervision of these cases.

Due to her close contact with the patient, the public health nurse may discover deviations from the normal—not only in the infant, but also in the preschool and school child. She helps parents make precise and concrete plans for the regular and continuing medical care of the crippled child.

Records of local orthopedic and cardiac cases and those of other physical defects should be as complete as possible and checked frequently with the state field representative of Crippled Children Services. The nurse's duties in the individual case lie in the education of the family in the patient's care, the demonstration of and instruction in home nursing, the general health supervision of the afflicted child, and the supervision of therapeutic exercises recommended by the physician in charge. The nurse will aid the rehabilitation of the patient in every way.

PRACTICE OF MEDICINE IN RAMSEY COUNTY

(Continued from Page 866)

to exclude or curtail the activities of the general practitioner. However, it is the duty of all hospital staffs who are true to their profession to establish regulations necessary to prolong life, to reduce mortality and morbidity. It is to this end that self-imposed rules are laid down by the staff which include more consultations, all for the benefit of the patient, the doctors, and the hospital.

In closing, I would say, be true to yourselves and your profession so that you will always be proud of your profession and your profession will be proud of you.[4]

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

CONGRESS PASSES RECORD NUMBER OF HEALTH BILLS

Public health, medical and hospital legislation, was enacted into law in record-breaking proportions during the second session of the Eightieth Congress just recently completed. Federal health insurance again failed to make the grade.

Bills adding new duties to the United States Public Health Service and rearranging certain of its administrative functions; measures applying to the Veterans Administration and certain other general proposals were written into the statute books.

A number of desirable pieces of legislation such as the National Science Foundation and federal subsidation of local public health units were left behind in committees of the House and Senate. That raises the question if there might be a possibility of action on them during the special session. However, according to a Presidential statement issued at the time of his calling of the session, other "must" legislation and more urgent matters such as civil rights, housing, wages and the possible repeal of the Taft-Hartley Labor Act, will occupy the lawmaker's time.

The first session in 1947 of the Eightieth Congress passed only a handful of medical and health bills compared to the tremendous output at the second session. The heated controversy over whether to federalize or not to federalize medical care raged during both sessions. Hearings on two opposing bills—S.545 and S.1320—filled nearly six volumes.

Heart Disease and Water Pollution Attacked

Private efforts as well as government activities to combat heart disease were given a substantial boost by the National Heart Act, one of the bills just passed. This Act provides research grants, fellowships, nationwide control programs and other projects much like those for attacking cancer, venereal disease and mental illness previously instituted.

A National Advisory Heart Council of heart disease experts together with laymen is established with no ceiling on appropriations. Also a National Heart Institute to be located at Bethesda, Maryland, is authorized.

The first comprehensive water pollution law in national history was passed by the Eightieth Congress. Administering the law becomes the responsibility of the Surgeon General of the Public Health Service and consists of helping states, industries and municipalities in planning and carrying out remedial programs.

The major problem in preventing water pollution is felt to be one of disposing of industrial wastes. Under the new law, funds are authorized for loans to construct municipal water treatment plants, investigations of existing preventive measures and construction of a Public Health Service laboratory at Cincinnati.

Dental Research Promoted

A bill to set up a National Institute of Dental Research and an advisory council similar to the heart group was also passed. It authorized $2,000,000 for the construction of an Institute to be located at Bethesda, to equip it and to provide grants-in-aid.

The Hospital Survey and Construction Act was liberalized by another measure. The Virgin Islands are now eligible, and states are granted additional time in which to enact legislation necessary before they can receive federal funds.

Two bills are aimed at improving health in the Philippine Islands. One bill authorizes training of a limited number of Filipinos in public health methods and administration in U. S. schools together with the establishment of public health training centers in the Philippines. Another sends financial aid to Filipino veterans of the Japanese resistance movement.

Several other measures were enacted which pertained to veterans. Research on various pros-

thetic and sensory appliances is authorized; intern training is established in VA hospitals whereas formerly there were only residencies; service-connected paraplegia cases are granted financial assistance to enable them to acquire or remodel dwellings suited to their needs; and several tropical diseases are added to the list of ailments for which service connection can be claimed in obtaining medical care at government expense.

U. S. Joins World Health Organization

United States membership in the World Health Organization was finally passed by both houses of Congress after a compromise had been reached which was well padded with safeguards and loopholes. The bill places a ceiling on this nation's share of expenses of WHO, and the stipulation is made that our membership will not commit the United States "to enact any specific legislation" regarding matters referred to in the WHO Constitution. The U. S. reserves its right to withdraw from WHO on a one-year notice.

Our representative on the WHO executive board will be a graduate of a recognized medical school who has spent not less than three years in active practice. He will be appointed by the President and confirmed by the Senate. The first meeting of the World Health Assembly took place at Geneva on June 24. The President sent three delegates: Drs. Thomas Parran, James R. Miller and Martha Eliot.

Several other miscellaneous measures relating to health were passed. The Food, Drug and Cosmetic Act was amended to make it a criminal offense to adulterate or misbrand drugs, foods, therapeutics or cosmetics even after interstate shipment has been completed and they are ready for retail sale. The federal government also is doubling its annual contribution to the Gorgas Memorial Laboratory in Panama, which is engaged mainly in tropical disease research.

Exposed x-ray film may now be imported free. No physically handicapped person may be discriminated against in connection with civil service appointments, transfers or promotions.

Science Foundation Dropped

Among the many important bills affecting medicine, adversely or favorably, which failed to get out of committee was S.2385 to establish a National Science Foundation. This is the second time attempts to establish the foundation have failed. Last year President Truman vetoed a similar measure.

Briefly, the National Science Foundation would initiate and support basic science research; would develop and encourage adherence to a national policy with regard to research and education in the sciences (including medical science); would appraise impact of research on industrial development and the general welfare; would enable persons with ability to receive scientific training through scholarships and graduate fellowships; and would correlate its program with that of individual and public research projects. Also it would foster interchange of scientific information among the scientists of this country and abroad.

The National Science Foundation would be an independent agency of the federal government with a director and 24 members appinted by the President. An executive committee of nine would implement the policies developed by the foundation. There were to have been four divisions—(1) medical research, (2) mathematical, physical and engineering sciences, (3) biological sicences and (4) scientific personnel and education, which would grant scholarships and graduate fellowships.

Fortuantely, S.140, a bill to create a Department of Health, Education and Security with its head a member of the President's cabinet also failed to get out of committee. The two opposing "health insurance" measures, S.1320 (the Wagner-Murray-Dingell Bill of 1948) and S.545, the Taft-Smith-Ball-Donnell Bill, were unable to get past the discussion stages.

COMMITTEE HOLDS LINE ON HEALTH INSURANCE

A thorough investigation of the pros and cons of compulsory national health insurance, which is to be continued by Congressional action, was undertaken by the subcommittee on health of the Committee on Labor and Public Welfare of the Senate. Thus the line was held on health insurance through one more Congressional term.

To this subcommittee were referred the various measures calling for national health plans; and under the leadership of Senator H. Alexander Smith, the group has employed every available means to get at the facts and obtain an impartial view of our national health status before giving the go-ahead signal to any remedial programs.

During the closing sessions of the Eightieth

Congress, Senator Smith submitted a detailed report of his subcommittee's activities. At that time his request that the work be allowed to continue was granted; a full report is to be made to the next Congress not later than March 15, 1949.

In its search for facts and opinions on health legislation, Senator Smith's group polled the governors of the 48 states and found that none of those answering the poll favored a federally administered medical care program. An impartial research agency, the Brookings Institution, was also asked for its opinion. This group brought in a report which was very damaging, to say the least, to the pro-nationalists' arguments; compulsory health insurance rated the Institution's unqualified veto.

The subcommittee considered no less than twenty-seven bills on proposed health legislation during the last session of Congress, it was revealed. Of these, the two comprehensive and most important proposals were, of course, S.1320 and S.545. These bills, which represent the two opposing sides of the national health controversy—one side insisting on federal control and the other upholding the rights of the individual states to set up their own programs—contain provisions which affect, overlap and duplicate the contents of most of the other bills considered by the committee. For that reason, the most of the subcommittee's time was taken up with considering them. Twenty-six days of hearings were held on S.545 and S.1320, with a number of government officials and heads of national groups being called in to testify.

Fundamental Issues Analyzed

In the report to Congress, Senator Smith analyzes the basic issues which must be considered in designing federal health measures. First and foremost, Senator Smith points out, there is the question as to whether a serious national health problem actually exists. This is debatable and involves consideration of the state of health of the population; the distribution of medical, hospital, dental and other health services and whether the majority of the population has access to such services.

Another important consideration is the fundamental question as to whether it is necessary for the federal government to expand its operations in the field of health. Available evidence suggests that wide-scale federal intervention, particularly in the field of medical care for individuals, may not be sound practice.

A third fundamental question is the methods or systems to be employed in providing medical and health services to individuals in the event of further expansion in this field, for example, the grant-in-aid system to assist states in developing their own health programs and the compulsory health insurance plan wherein the people are taxed to support a central health fund.

The fourth consideration that Senator Smith points out is that each piece of proposed health legislation should be considered in its proper relation to other pending matters, rather than individually. Moreover, health legislation should be considered with regard to other broad welfare programs of the government. The long-range effects of such proposals as compulsory health insurance and wide-scale grants-in-aid to states when their costs are added to the burdens of existing programs should be considered.

A vital question is that of selecting the proper administrative organization for dealing with health functions. At present, health programs are widely scattered throughout various departments with a sad lack of co-ordination. Last, but not least, Senator Smith concludes, there is the fact, often overlooked, that health simply does not exist in a vacuum. It is the result of an interplay of a vast number of factors. Providing for medical care alone will not meet other needs that exist nor insure good health for the nation. It is extremely doubtful that people can be legislated into good health.

With Senator Smith on the subcommittee on health are Senators Ball (Minnesota), Donnell (Montana), Murray (Montana) and Pepper (Florida).

ROLE OF COUNTY SOCIETY REAFFIRMED AT AMA MEETING

The County Medical Society—its part in medical organization and its responsibilities to its membership and the public—was discussed at the Grass Roots Conference of County Medical Society Officers, which was a prominent feature at the recent American Medical Association meeting in Chicago.

The AMA meeting this year was well attended. Total registration was 11,963 fellows. Doctors' wives, guests and exhibitors brought the total attendance to nearly 22,000. The County Offi-

cers' meeting which was held on the Sunday preceding the meeting proved popular and valuable.

At the meeting it was pointed out that the size and spread of the county societies' activities vary in accordance with the locality in which they are located. The problems of organizational responsibilities vary widely and are often complex. Interesting background information concerning the county medical society's relation to its respective state medical association as a component of the American Medical Association was presented.

Problems in programming were also discussed, and it was shown that here again each society has a different set of problems to meet, depending on the locality and facilities available—whether programs should be held once a month or once a week; whether well-known outside speakers should be brought in or the program should be prepared and presented by local society members.

Name "Organized Medicine" Deplored

It was suggested that the name "organized medicine" should be changed to "scientific medicine," a suggestion which might be used to great advantage from the standpoint of public relations.

Among the pressing problems present at the local level which need solving and which were discussed at the meeting were night calls, uniform fee schedules for indigents' care and county society participation in local activities. It was emphasized that no health agency should be overlooked or overemphasized by the county medical society. The topic of Community Chest and the place of the medical profession in the drive for funds was emphasized both from a community service angle and as a public relations gesture.

Health councils were stressed as projects in which the county medical society should not only participate, but could well afford to take the lead.

The major burden of public relations was placed squarely on the shoulders of the local organization as the basic unit of our medical structure. In his president's address, Dr. Edward L. Bortz emphasized the position of the county society by calling public relations the "field of human relations," which brings the problem right down to the individual physician.

As the basis for an active society, the great importance of carefully selecting and maintaining membership was discussed. Indoctrination courses on ethics for new members was recommended.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Health Food "Doctor" Pleads Guilty to Violation of Basic Science Law

Re State of Minnesota vs. "Dr." Lloyd C. Shanklin.

On July 14, 1948, Lloyd C. Shanklin, fifty-four years of age, with no permanent address, entered a plea of guilty in the district court of Hennepin County to an information charging him with the crime of practicing healing without a basic science certificate. Shanklin was sentenced by the Hon. Lars O. Rue to a term of one year in the Minneapolis workhouse. The sentence was stayed upon condition that Shanklin return the money he had received while giving so-called health lectures at the Andrews Hotel, Minneapolis, just prior to his arrest.

Shanklin was arrested July 9, 1948, by Inspector Bernath of the Minneapolis Police department following a report that Shanklin was to give a course of three health lectures at a reduced price of $15, the usual price being $75. As a special inducement, Shanklin was going to give $3 worth of vitamins and health food to each person attending his lecture course. Shanklin was arrested before he had much of a chance to proceed with his lecture course. Shanklin stated that he was born in Lynn County, Iowa, and that while he was not a high school graduate he claims to have studied many subjects including health, sex, foods, religion, et cetera. However, he had no diplomas and admitted that he was not licensed in any state to practice any form of healing.

Shanklin admitted that he had been arrested in New York City on two occasions for similar violations in 1942 and 1944. Shanklin claims to have been on a lecture tour in Ohio before coming to Minnesota. He stated he lived in Stanberry, Missouri, from 1914 to 1918 and that he owned an orange grove in Homestead, Florida, for ten years prior to 1945. He also had on his person a card indicating he had lived in Indianapolis, Indiana.

Itinerant Health Lecturer Pleads Guilty to Illegal Practice of Healing

Re: State of Minnesota vs. Edna Evans, also known as Fra'Zee Evans.

On July 16, 1948, Edna Evans, also known as Fra'Zee Evans, sixty-six years of age, giving her home address as 723 So. Mansfield, Los Angeles, California, entered a plea of guilty to an information charging her with the crime of practicing healing without a basic science certificate. The plea of guilty was entered before the Hon. Paul S. Carroll of the district court of Hennepin County, Minnesota. Upon recommendation of the county attorney and legal counsel for the Minnesota State Board of Medical Examiners, Judge Carroll imposed a fine of $500 or, in lieu of the fine, twelve months in the Women's Detention Home. Mrs. Evans paid the fine at once and told the Court that she had given her last health lecture.

Mrs. Evans was arrested July 15, 1948, after giving three health lectures at the Leamington Hotel, Minne-

(Continued on Page 923)

Minnesota Academy of Medicine

Meeting of March 10, 1948

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 10, 1948. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 by the president, Dr. T. A. Peppard.

There were forty-four members and one guest present.

Minutes of the February meeting were read and approved.

The scientific program consisted of two theses.

MALIGNANCY OF THE SKIN

CARL W. LAYMON, M.D.
Minneapolis, Minnesota

Malignant neoplasms of the skin are usually of epithelial or connective tissue origin, the former being called epitheliomas and the latter sarcomas. Epitheliomas are far more common than sarcomas. In general, cutaneous malignancies possess features which are essentially injurious to the host and thus differ from benign new growths. Among these features are: tendency to infiltration, local destructive properties, formation of metastases, recurrence after removal, local interference with function and general toxic action of absorbed tumor products. In this paper the lymphoblastomas will not be considered.

Sarcoma

Malignant connective tissue tumors are rare in the skin. They are of various structural types such as the spindle, mixed, round celled or fibrosarcoma. They can occur on or beneath the skin anywhere but are especially frequent in the inguinal regions, thighs, and buttocks. They vary greatly in size from a few mm. to several cm., are soft or extremely firm, of the color of skin to red or bluish-red and are single or multiple. The clinical picture of cutaneous sarcoma is frequently nondiagnostic—hence histologic study is necessary. The prognosis depends upon the histologic findings and is fairly good in fibrosarcoma. In malignant and undifferentiated round-celled sarcoma metastasis may occur in the lungs, resulting in death. Surgical excision is the therapy of choice since most of these lesions are radioresistant.

Multiple Hemorrhagic Sarcoma of Kaposi.—The lesions in this special type of sarcoma are either doughy infiltrated plaques or pea to bean-sized reddish or reddish-purple nodules. Telangiectasia may be a prominent clinical feature. The individual lesions may persist, disappear or ulcerate. Almost all cases occur in males. The extremities are most frequently involved, especially the lower, although lesions may be present anywhere on the body. The course may be extremely rapid, death having been known to occur within a few months. The average duration of the disease is from five to ten years, although cases have been reported in which the course was as long as twenty-five years. Almost any organ in the body may be involved but especially the gastrointestinal tract, liver, lungs, and the retro-peritoneal and mesenteric lymph nodes. Anemia, eosinophilia, and monocytosis may be present. A combination of arsenic internally combined with judicious roentgen therapy is the most satisfactory method of treatment. Although complete cure is almost unheard of, life may be prolonged many years by proper treatment.

Dermatofibrosarcoma Protuberus.—This disorder usually begins with small, hard nodules, which gradually enlarge to form thick, sclerotic plaques. On the latter, tumors subsequently develop which are sessile, pedunculated or mushroom-like. Occasionally the lesions become ulcerated and form vegetating masses. The sites of predilection are the abdominal wall, chest, upper and lower extremities, back and inguinal regions. The treatment of choice is surgical extirpation.

Hemangio-Endothelioma.—A hemangio-endothelioma is a tumor possessing low-grade malignancy, a precise histologic structure and is composed essentially of blood spaces and vessels in different stages of development. The blood does not circulate through the tumor mass because of the immaturity of many of the vessels. True endothelioma of the skin does not exist, for the origin of an endothelioma must be from endothelially lined structures such as blood or lymph vessels; therefore, the so-called endothelioma of the external surface is either a hemangio-endothelioma or a lymphangio-endothelioma. Many so-called endotheliomas are really epitheliomas or sarcomas.

The tumor may occur on almost any part of the body. It varies in size from a few millimeters to several centimeters and is usually dark red in color. Most of these tumors are moderately soft in consistency and may or may not be surrounded by satellites. This type of tumor frequently ulcerates, usually following trauma, and bleeds profusely. Because of its infiltrative nature it may become attached to underlying structures such as cartilage or bone or to the overlying skin. In the latter case a pedunculated tumor may form. The lesion is usually not tender nor painful when manipulated.

The degree of local malignancy is variable. In some cases hemangio-endothelioma is definitely benign. Certain cases are malignant enough to penetrate deeply although the ability to metastasize is extremely low. It is questionable whether subsequent growths should be re-

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From the Division of Dermatology, University of Minnesota, H. E. Michelson, M.D., Director, and the Dermatology Service, Minneapolis General Hospital, S. E. Sweitzer, M.D., and Carl W. Laymon, M.D., Chiefs. Inaugural Thesis read before the Minnesota Academy of Medicine, at its regular monthly meeting of March 10, 1948.

garded as metastases or lesions of multicentric origin. In most cases excision is sufficient to effect a cure, although hemangio-endotheliomas are responsive to radiation. Recurrence may occur although the recurrent tumor seems to be as amenable to treatment as the original growth. The prognosis as to life is good.

Epithelioma

Practitioners should never forget the following aphorism: in every patient over forty years of age one must rule out epithelioma in every plaque, nodule, or ulcer which doesn't heal within a reasonable period of time especially if the lesion is located on the face. The value of histologic examination cannot be overemphasized. The histologic types include basal cell, basal squamous cell and squamous cell epitheliomas. If the muco-cutaneous junctions are excluded, basal cell epitheliomas are more frequent than the squamous cell variety. If however one includes the muco-cutaneous junctions, squamous cell epitheliomas are more frequent on account of the relatively great number of epitheliomas of the lip. Mixed cell or basal squamous epitheliomas occur in from 10-20 per cent of the cases.

Approximately 80-90 per cent of all epitheliomas of the skin occur about the face and neck. Although certain locations may suggest the type of epithelioma, final diagnosis must depend upon the microscopic findings. As a rule basal cell epitheliomas occur most frequently about the nose, eyelids and the anterior portion of the face above the level of the nose. The squamous cell type occurs more frequently about the ears, on the posterior part of the face and below the level of the nose. Epitheliomas of the hands, lips, and genitals are almost invariably of the squamous cell type. In general, the basal cell variety progresses much more slowly than the squamous cell.

There are certain conditions which predispose to the development of cutaneous epithelioma, among which are radiodermatitis, dermatoses such as lupus erythematosus and lupus vulgaris, varicose ulcers, scars following burns and wounds, long exposure to sun and wind, the ingestion of arsenic and chronic irritation from substances such as tar and oil.

Epithelioma of the skin usually begins as a nodule which gradually enlarges to form a plaque which is characterized by peripheral activity in the form of a pearly border. The malignant cells usually outgrow the blood supply so that an ulcer sooner or later forms. There are several special types such as the scar, button, cystic, or rodent ulcer. Much more rapid growth and tendency to metastasize characterize the squamous cell variety. Histologic examination of all suspected epitheliomas is not only justified but urgently indicated. Scalpel surgery, irradiation, cauterization or desiccation are all effective in the treatment of epithelioma of the skin when properly used.

Superficial Epitheliomatosis.—This is a distinct type of epithelioma occurring occasionally as a solitary plaque but usually as multiple lesions limited as a rule to the trunk and face. There are two varieties: one dry, in which there are superficial scaly plaques somewhat resembling psoriasis but characterized by a very fine thread-like, elevated pearly border, and a second less common eczematoid type which suggests extramammary Paget's disease. Superficial epitheliomas usually perist either unchanged or slowly growing for many years. In the slow-growing types the lesions may be relatively radio-resistant so that destruction or excision is the therapy of choice. Other more rapidly growing lesions may respond to X-radiation.

Epithelioma of the Lip.—Epithelioma of the lip comprises one-third of all cutaneous epitheliomas. It occurs on the lower lip in 95 per cent of the cases and almost always after the age of fifty and almost exclusively in males. The lesions are indurated nodules with or without ulceration. In general, they may be divided into: (1) the papillary type which has a definite upgrowth from the surface, and (2) the infiltrative type which is a more penetrating variety. The lesions eventually metastasize to the submetal and submaxillary lymph nodes. About one-third of all patients who have epithelioma of the lower lip die even though the disease is easily cured if properly treated in the early stages. After metastasis has occurred the involved nodes compress the organs of the neck and become ulcerated and infected. Remarks concerning the therapy of epithelioma in general also apply to epithelioma of the lower lip. Either surgical excision, radiation or destruction suffice if thoroughly and properly done. Routine dissection of the lymph nodes of the neck is not advisable since many observers have found that if the lymph nodes are not palpable at the time the primary lesion is eradicated metastasis rarely occurs.

Xeroderma Pigmentosum.—Xeroderma pigmentosum is a rare disease which is characterized by hypersensitivity to light followed by hyperpigmentation, atrophy of the skin, telangiectases and warty and malignant growths. The disorder has its onset early in life, although occasionally it begins in adults. In most instances sunburn following mild exposures to light, signals the beginning of the disease. Following this intense freckling usually occurs on the exposed surfaces of the body. Later, dilatation of blood vessels, warty growths, and keratoses appear, and still later malignant changes occur, most commonly basal cell epithelioma but occasionally the squamous cell type. Photophobia and lacrimation are prominent symptoms. The course of the disease is variable, but in almost all cases, however, the patients ultimately die of cancer. No treatment had been found which affects the final outcome of the disease. The avoidance of exposure to sun and the use of protective lotions is urgently advised. The treatment of the epitheliomas which develop is the same as that of epithelioma in general.

Atypical Forms of Epithelioma

Bowen's Disease.—This disease is considered by some to be a precancerous dermatosis while others feel that it is a highly specialized form of superficial epithelioma. It was first described by Bowen in 1912 as a solitary lesion composed of large papules or nodules and re-

sembling a nodulo-ulcerative syphilid. The lesions are usually located on the trunk and run an extremely slow course. There may be discoid plaques or nodules which are firm, dark brown, and elevated. Ulceration may supervene. There is usually an arciform configuration. Cases have been reported in which squamous cell epithelioma eventually developed with metatasis and death. Surgical excision is the treatment of choice as the lesions are radio-resistant.

Paget's Disease.—Paget's disease is a specific and rare form of malignancy which manifests itself almost exclusively around the nipple, especially in the female sex although cases in males have been reported. It is characterized by an early eczematoid stage and the presence microscopically of peculiar hydropic cells although in some cases the lesions are dry and psoriasiform. The borders usually remain sharply defined and the area gradually becomes indurated and infiltrated. Retraction of the nipple may be present or absent. In practically all cases there is an underlying carcinoma of the breast either independent of the cutaneous lesions or extending and connecting with them in the form of an adenocarcinoma or intraductal carcinoma. Treatment therefore is surgical. Simple amputation of the breast or radical amputation plus dissection of the adjacent nodes may be indicated depending upon the findings.

Nevocarcinoma (melanocarcinoma or malignant melanoma).—This type of tumor is the most malignant and rapidly fatal of all cutaneous neoplasms. It usually begins as a dark brown or blue-black nodule from a few mm. to several cm. in diameter. A history of preceding pigmented nevus is obtained in from 30-50 per cent of the cases. Many observers believe that nevocarcinoma originates only from the epidermal-dermal type of nevus which has also been termed junction nevus. Nevocarcinoma, however, may develop from apparently normal skin. The lesions as a rule first metastasize locally developing firm, dark, satellite nodules. The adjacent lymph nodes involved next followed by metastasis to any of the internal organs but especially to the liver and lungs. Nevocarcinoma may develop at any age although the average is fifty years. The disease appears about equally in both sexes. This type of malignancy occurs especially on exposed surfaces, particularly the face and extremities and especially the feet. Attention should be called to a special type—the so-called melanotic whitlow which may resemble an ordinary felon but which is surrounded by pigmented spots or streaks. Radical excision is the treatment of choice. Prognosis of course depends upon recognition of the early stages of the disease.

In conclusion it may be said that malignancy of the skin can, in the majority of instances, be successfully treated either surgically or by a number of physical agents. Each case requires individualization since one can so frequently arrive at the same result by one or a combination of several methods. The well trained therapist should not be overly enthusiastic for one method and should be prepared to use the agent best suited for each case. He should in general use that method at which he is most adept, keeping constantly in mind that the first attack on cutaneous malignancy is usually the most effective and for this reason should be well chosen and if possible complete, so that further therapy will not be necessary. Insufficient treatment, whether it be surgical, roentgenologic or otherwise, is to be heartily condemned.

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Discussion

Dr. H. E. Michelson, Minneapolis: I am very pleased and proud of Dr. Laymon's presentation of cutaneous cancer. I think those of us who deal with skin cancer look upon it more as a problem and not as a disease and, in so doing, we are not satisfied with our present status but try to improve things wherever possible. Two groups of doctors see skin cancer—dermatologists and general practitioners. There should be no great difference in their ability to diagnose skin cancer. It is a rather simple diagnosis. The only advantage we have is that we are more suspicious and more willing to perform a biopsy. Since we, as dermatologists, see many skin cancers, we have a distinct duty to the public and to the profession. I think the public has the right to expect of their doctors a written clinical and microscopic diagnosis and that their doctors should give them in writing just what treatment was given so that if the patient wishes to seek further advice or if there is a recurrence, they will have exact information about what was done. Our duty to the profession is to point out the shortcomings of present-day diagnoses and treatment and to not be satisfied but to continue to look for better treatment for there is much yet to be expected and we must not become content with what we are doing because the results seem to be good.

Dr. Paul O'Leary, Rochester: I have enjoyed Dr. Laymon's presentation very much. In almost twenty-five

years of experience with the grading of epitheliomas, as suggested by Dr. Broders, I have learned to place much faith in it. In an individual with a grade 3 or 4 carcinoma about the mouth, it gives me much satisfaction when glandular dissections are done of the area drained by the malignancy. All lesions that appear to be basal cell epitheliomas clinically are not so under the microscope and for the occasional case in which the microscope reveals a higher degree of malignancy than was suspected clinically, a more radical therapeutic procedure accordingly results in a higher incidence of cure.

One more point that I would like to discuss very briefly is my recent experience with the use of sodium pteroyl triglutamate, under the trade name of Teropterin, in the treatment of cutaneous malignancy. You may recall that at the meeting of the American Chemical Society last year there was some publicity given as to the value of this remedy for treatment of cancer. I have used it only in individuals in whom x-ray therapy and surgical procedure were no longer advisable either because of the extent of the lesion and metastasis or because x-ray therapy had been given to the limit. In other words, we have used it essentially in cases which were hopeless. I have treated some twenty-eight cases, including five with metastatic melanoma, without any encouragement. Today, however, I saw a woman whom we treated last fall, who had a primary melanoma in the cheek with a large gland in the side of her neck, diagnosed under the microscope. When treatment was started she had some metastatic nodules elsewhere throughout the skin and following treatment she said the nodule at the angle of the jaw (in other words, the original metastatic lesion from the primary) had disappeared. Unfortunately, however, in spite of the disappearance of this lesion she has continued to develop other metastases in her skin.

There have been no reactions from the Teropterin; in fact, it seems to be quite an inert product. I have been informed that there are several cases in Boston which have been under treatment for more than a year, in which it would appear that metastasis had been arrested, but the patients are still under observation.

Dr. John Madden, Saint Paul (by invitation): I think that everything that need be said has been said. I enjoyed Dr. Laymon's presentation very much.

Dr. F. W. Lynch, Saint Paul: Dr. Laymon has thoroughly and completely discussed the subject of malignancy of the skin. In such a discussion one must always face the question as to the most suitable treatment. It seems evident that carcinoma of the skin is going to be treated not only by dermatologists, but also by surgeons, radiologists, and general practitioners. A treatment that is most effective in the hands of one specialty may prove to be less so in the case of another group of physicians. Even within a specialty there will be individuals who will give more effective treatment by one method than by another. In general, the best results will be obtained by using the method with which one is most familiar. This is not entirely true and the best therapist will be the person who is capable with several methods of treatment and can choose from them. When an individual cannot use several methods, it is probably better that there be frequent reference of patients to other physicians.

Dr. Michelson commented on the importance of the individual and his response to the carcinoma. Dr. Leven will clearly recall a patient whom I have seen with him. This patient has basal cell carcinoma proved by repeated biopsies, but the process is obviously highly malignant in the sense that the lesions infiltrate widely and deeply in spite of the microscopic appearance of relatively benign tumor cells. This is the most obvious example that I have seen with such a complete lack of resistance to invasion by carcinoma of a basal cell type. It seems likely that there are great variations in the individual's response in other cases. In the treatment of cancer there are, then, several points to consider: first, the physician with his past experience, technical abilities, and available equipment; second, the lesion with its clinical features of invasiveness, destructive tendency, or hypertrophic growth. The microscopic nature of the lesion is also highly important. Thirdly, the response of the individual to the carcinoma can often be judged by the clinical appearence of the lesion, but this will not be true when the lesion is in an early stage of development. Choice of treatment must be dependent upon an analysis of these factors which have been listed. The highest effectiveness will be achieved by early and highly skilled treatment.

Dr. S. E. Sweitzer, Minneapolis: I want to congratulate Dr. Laymon—there is not much more that can be added to the paper. My view of these epitheliomata is that some doctor has seen them and dismissed them as not amounting to very much, and said that we will watch them. There is no reason for watching. These lesions should be biopsied and proper diagnosis made, and treatment started right away. Then we will not see any of these neglected cases with such extensive involvement.

Dr. Carl Laymon, in closing: There is very little to add and I thank all of the men for their discussions. I think Dr. O'Leary's point regarding the grading of epitheliomas is well taken. It is an important additional help in the appraisal of the case under consideration. It should be emphasized that a patient who has had an epithelioma of the skin is apt to develop other lesions at other sites at a later time even though the initial lesion has been successfully treated.

I thank the members for the privilege of being here.

OCULAR PSYCHONEUROSIS WITH PARTICULAR REFERENCE TO ANXIETY REACTIONS

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Saint Paul, Minnesota

It has been stated with considerable justification that an uncomfortable eye very frequently mirrors an uneasy soul. Despite this observation a survey of modern ophthalmic literature including current, standard textbooks clearly indicates that comparatively little has been written concerning ocular disorders of psychogenic origin. The majority of publications in this field deal with the conversion syndrome of hysterical blindness and its spectacular manifestations of motivated disregard of visual impressions, tubular fields and corneal anesthesia. Apparently very few efforts have been made by ophthalmologists to attempt an integration of commonly observed ocular complaints and symptoms into the fabric of such psychoneurotic states as psychasthenia, neurasthenia, reactive depression, hypochondriasis, and anxiety-tension reactions.

This deficiency in ophthalmic literature is quite striking in contrast to the numerous, well-known, and important contributions which have been made by cardiologists and gastro-enterologists, for example, to a better understanding of the somatic manifestations of functional disorders.

It might be of interest to consider some of the reasons why there exist so few articles dealing with the relation-

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ship between psychoneurotic states and the visual apparatus. It cannot be attributed to lack of experience, for ocular complaints, unmistakably of functional genesis, are encountered almost daily in ophthalmic practice. Nor can it reasonably be ascribed to insularity on the part of ophthalmologists, for routine examination of the fundus oculi frequently leads to a diagnosis of systemic disease such as diabetes, arteriosclerosis, hypertension, nephritis, brain tumor, multiple sclerosis, blood dyscrasia and other maladies of a constitutional nature too numerous to mention.

It is, of course, true that the majority of ophthalmologists are relatively unskilled in the art of psychiatric history-taking and interrogation. It is perhaps equally true that quite generally ophthalmic histories leave something to be desired insofar as completeness is concerned. Rarely, for example, is the question of the family history accorded adequate treatment in the questioning of ophthalmic patients. Yet in a history of blindness in a parent or sibling may be found the underlying cause of a profound disturbance of the personality.

In the training of ophthalmologists much stress is necessarily placed upon the acquisition of facility in the use of diagnostic instruments of precision and accuracy. The ophthalmologist therefore tends to place great emphasis upon findings and data acquired through purely objective diagnostic procedures. As a consequence he is often inclined to think in terms of organic disease entities and to arrive at a diagnosis of a functional disorder only secondarily and by exclusion rather than by a dynamic approach to the problem. It is also a fair presumption that the doctor-patient relationship of the ophthalmologist frequently differs to a considerable degree as compared with that enjoyed by the family physician or internist. There is still another aspect of ophthalmic practice which is inimical to a realistic evaluation of the psychoneuroses, and borderline psychoneurotic states. The great majority of patients who consult an oculist anticipate that a very tangible and concrete explanation of their symptoms together with a definite solution of their particular problem will be accorded them at the conclusion of the eye examination. It seems conceivable that this aspect of the practice of diseases of the eye may have conditioned the attitude of many ophthalmologists, particularly those who each day perform a large number of refractions, with respect to the final disposition of patients whose symptoms are antithetical to the clinical findings. It is simply much easier to change a pair of glasses than a way of life.

Under ideal conditions of medical practice it would obviously be desirable to obtain a psychiatric consultation upon all patients who exhibit psychoneurotic traits. So great is the misunderstanding of many patients, however, even in this era of widespread dissemination of medical knowledge in the public press, that unless it is managed with considerable skill and tact, the suggestion that a psychiatric consultation is in order may evoke a reaction of considerable resentment on the part of the patient. It is sometimes quite necessary to resort to an elaborate build-up and even fanciful explanation of need for psychiatric consultation before certain categories of patients can be persuaded to avail themselves of the advantages of management by our psychiatric colleagues.

The large number of patients whose illness is partly or wholly of a functional nature, however, precludes the possibility of referring all such individuals to the rather small number of available psychiatrists and internists who are skilled in the handling of psychosomatic disorders. Many of the borderline and milder psychoneurotics can and should be treated at first hand, reserving the more difficult problems for the psychiatrist.

In recent years, partly as the result of more intensive psychiatric instruction at the undergraduate level and partly as a consequence of a more compelling interest in psychosomatic disorders stemming from the experiences of World War II, the management of psychosomatic disorders by the medical profession at large has improved appreciably in recent years. It must be acknowledged that the armed forces accomplished a great deal in ameliorating the attitude of many physicians with respect to mental disorders of all types, particularly the psychoneuroses. Credit is also due the policymakers of our medical schools for the powerful influence they have exerted in emphasizing the importance of psychologic medicine.

In the military service during World War II an unprecedented opportunity of acquiring a vast amount of data concerning the incidence of the various types of ocular psychoneurosis unfortunately was lost through lack of a centrally directed program of clinical research. Since nearly 40 per cent of all medical discharges from the Army were due to psychiatric states, principally psychoneurosis, it can readily be appreciated that there was no dearth of material. In all the larger medical installations, competent psychiatric examiners were available as consultants. Furthermore, any difficulty in persuading the patient to accept psychiatric attention could be expeditiously resolved. While it is to be regretted that no formal study of the incidence of the ocular psychoneuroses was ever undertaken, certain impressions come readily to mind. At one of the large Army eye centers, O'Reilly General Hospital, located in Springfield, Missouri, neuro-psychiatric consultations were requested upon a very large number of eye patients. Very few instances of ocular hysteria were encountered. Malingering, which is, of course, a psychopathic trait and therefore does not fall within the purview of this discussion, was also uncommon. The great majority of patients referred to the psychiatrist were found to be suffering from anxiety reactions of varying profundity, although not infrequently an admixture of other psychoneurotic states, particularly neurasthenia, and hypochondriasis was also present. Obsessive-compulsive states and reactive depressions were seldom encountered in patients assigned to the eye service.

While no precise figures are available in existing ophthalmic literature, impressions gained from private practice indicate that of the various psychoneuroses, anxiety reactions are more common in the field of ophthalmology than other varieties. They may be sufficiently severe to constitute a major problem in their clinical management. It is the purpose of this thesis to examine and discuss anxiety-reactions having an ocular basis, to speculate upon their pathogenesis, to enumerate

some of the more commonly encountered ocular symptoms, and to elaborate upon measures which are regarded as of value in their treatment.

An anxiety state should be looked upon as one which occurs in a patient who is otherwise mentally normal, and which is either directed toward some object or situation which under ordinary circumstances does not evoke such a reaction, or else one which is experienced as an undirected emotional state, the cause of which the patient is unable to comprehend. Psychiatric research has demonstrated that an apparently misdirected or undirected anxiety reaction almost invariably arises in circumstances for which an intelligible explanation can be found. In some instances a total psychobiological survey of the patient may be required, including a longitudinal life history and even psychoanalytical studies.

Anxiety of psychopathologic proportions can arise from conditioned stimuli. The well-known experiments of Pavlov have conclusively established such a possibility. Many of the phobias, for example, owe their origin to conditioned stimuli. The environment or setting in which the initial symptoms occur, while not of necessity their origin, may serve as a conditioned stimulus. Such a stimulus is quite capable through the mechanism of association, of exciting the emotion of anxiety although the patient himself may have forgotten the original cause.

Anxiety states may also be induced by suggestion and even directed toward a situation which ordinarly should occasion no cause for alarm. Fears, acquired in early childhood, have frequently persisted into adult life as the result of injudicious and ill-advised remarks or suggestions from parents, nurses, teachers and playmates.

Anxiety states may also arise in a dissociated form where the anxiety is so completely dissociated from its original source that the source is no longer recognized as its cause. Such dissociation of the emotion from its cause is explained by the psychological phenomenon of repression. According to the Freudian School, many, if not the majority of anxiety neuroses, are attributable to a repressed infantile attachment to the parent of the opposite sex.

In addition to the three aforementioned types of anxiety, psychiatrists recognize a fourth type which they term constitutional anxiety. In some individuals anxiety constitutes the customary or habitual reaction to a large part of their environment. It has been said of such persons that it is not the threat which is serious, but the self which is vulnerable. This form of anxiety becomes established very early in life and is often the outcome of a deeply-rooted sense of inferiority. It is considered to be the product of situations which obtain in family life during childhood and early adolescence. Competition between children for the affection of their parents may lead to anxiety neurosis, or it may develop through association with emotionally unstable, tyrannical or alcoholic parents. The psychologic patterns thus established in early life become perpetuated in the reactions of later years. Since anxiety reactions, involving the eye, almost invariably are characterized by mental and physical manifestations as well, it seems desirable to mention some of the more important signs and symptoms which enable the clinician to arrive at a diagnosis.

The outstanding symptom, of course, is anxiety. Such apprehensiveness may be either quite constant and diffuse or it may occur in paroxysmal intensifications resulting in a state of utter panic. Irritability, insomnia, vertigo, inability to concentrate, vague feelings of depression and nightmares are other commonly encountered symptoms. Occasionally patients complain of a sensation of pressure at the vertex or a sensation of falling through space. Anorexia is not at all uncommon. Tachycardia, diarrhea, frequency of micturition, and profuse sweating may occur and point to over-activity of the sympathetic nervous system.

Upon physical examination the blood pressure is usually subnormal, the pulse rapid, the extremities cold and clammy; the pupils are often dilated but there is no disturbance of their reaction to light or accommodation. Exaggerated tendon reflexes may be elicited. Anxiety neurosis must be distinguished from vaso-vagal attacks, angina pectoris, organic brain disease, particularly senile changes due to arteriosclerosis, agitated depression and in some instances schizophrenia, especially in its early stages. Of the other psychoneuroses it is more often confused with neurasthenia with which it has certain subjective symptoms in common.

The eye, since it contains within itself nearly all of the functional components upon which personal maladjustment and emotional events are capable of being reflected, readily lends itself to the production of symptom-complexes occasioned by psychological stresses and strains. In illustration and support of this viewpoint it is only necessary to recall that not only the reception of sensory impressions, but also the voluntary contraction of striated muscles and the involuntary contraction of unstriped muscle all may and do occur in the visual apparatus. One may therefore expect to encounter a wide range of ocular symptoms which are predicated upon disturbances of the psyche.

Among the essentially ocular complaints which characterize the patient suffering from anxiety neurosis, fear of blindness, fear of some specific eye disease, and fear of inability to use the eyes without incurring serious impairment of vision are the most striking. This is particularly true of patients who have lost the vision of one eye, in patients with early cataract, glaucoma, and macular disease, and is also encountered in patients suffering from amblyopia exanopsia. Pain, in and about the eyes, sometimes vaguely described and of a diffuse nature but occasionally definitely localized back of the eyes, and of great intensity, are also suggestive symptoms. Headache, occuring in anxiety neurosis, is frequently represented by the patient as an intolerable sense of pressure and is often localized at the vertex or some equally definite anatomic location. Inability to read or perform any type of close work except for a very brief time is a common symptom. Upon careful questioning the fact will usually be elicited, however, that such incapacity is due to a lack of concentration, a preoccupation of the patient with his fears, rather than the nervous asthenopia which is so prominent a feature of the neurasthenic personality.

Photophobia, unaccompanied by demonstrable signs of either external or intraocular inflammatory disease, constitutes an occasional ocular symptom in anxiety neurosis. The patient often presents himself wearing deeply tinted lenses. Examination of the eyes can sometimes be carried out with only the greatest difficulty because of the patient's aversion to exposure of the eyes to the ophthalmoscope or slit lamp beam. Even after instillation of local anesthetics the patient may resist efforts to proceed with the examination.

Frequent inctitation or blinking, while commonly noted in hysteria, is also seen in patients suffering from anxiety-tension states. It should not be confused with the essential blepharospasm of hysteria or senile blepharospasm. In the former condition other indices of hysteria are present while the latter condition occurs in individuals of advanced years and anxiety is not a prominent feature of the symptomatology.

Indecisiveness during the subjective examination for glasses is another characteristic of anxiety reactions, especially if marked. While a certain amount of hesitancy in responses as to whether a certain lens improves or fogs the vision is a common occurrence, the psychoneurotic patient with an anxiety reaction nearly always displays unusually great indecision and frequently volunteers the remark that he is afraid that faulty judgment on his part will result in receiving lenses that will be harmful to his eyes. This tendency is so evident in extreme instances that recourse to entirely objective examinations becomes desirable.

In dealing with psychoneurotic patients of any category, it becomes vital to achieve a proper assessment of emotional factors. The frank attitude that either the illness is mental or physical will inevitably lead to pitfalls. The establishment of good rapport between doctor and patient is of unusual importance. Failure to achieve such a rapport leads to a conviction on the part of the patient that the physician is either uninterested or insincere. It has been said of failure to establish a sound relationship, that while the patient may not know the cause of his difficulty he knows how he feels while the doctor knows the cause of the difficulty but does not know how the patient feels. An adequate history is obviously of extreme importance and for the ophthalmologist who is called upon to deal with anxiety states the family history with respect to the incidence of heredofamilial ocular disease should not be overlooked. Repeated examinations and oversolicitude on the part of the examiner should be sedulously avoided. Also superficial and hasty examinations and an attitude that the patient's illness is either of a mysterious or illusory character.

The eye examination must be sufficiently comprehensive and thorough, not only to exclude organic disease but also to impress the patient with the fact that the ophthalmologist is seriously interested in his complaints. Ill-advised haste and superficiality will only serve to arouse the thought that very possibly the true cause of the illness has been overlooked. An unsympathetic attitude will drive the patient to either a more understanding oculist or into the hands of some cultist or irregular practitioner.

It is, of course, quite possible to overlook organic disease of the eye and ascribe the patient's symptoms to a functional etiology. There are several eye diseases which may be misdiagnosed through errors of omission or lack of awareness on the part of the ophthalmologist. One of the most common is imbalance of the extraocular muscles, particularly vertical imbalances. The possibility of such imbalances should be borne in mind in patients with high degrees of anisometropia where a prismatic effect is produced by the lenses. Early glaucoma requires extremely meticulous care in examination, especially of the central field of vision, as recently emphasized by Hendrie Grant. The value of provocative tests should not be underestimated as a means of detecting very early glaucoma. Recurrent erosion of the cornea, causing severe and sharp pain, especially at night, is occasionally discounted as of no consequence and attributed to a psychoneurosis. Other corneal lesions such as superficial punctate keratitis and Sjogren's syndrome, or keratitis sicca, may fail to be recognized through failure to make an examination under the slit lamp. This last-named disease occurs most frequently in women about the time of the menopause and may be accompanied by arthritis and xerostomia. There is a deficiency of tears and examination of the cornea will usually reveal loose filaments of corneal epithelium. A foreign body sensation and photophobia are the usual complaints. The severity of the patient's complaints may seem at considerable variance with the findings uncovered at a single examination unless a Schirmer test to measure the rate of flow of tears is carried out.

Doubtless there are other rather uncommon eye diseases of obscure etiology which may escape detection and cause patients labeled as psychoneurotics to wander from physician to physician seeking relief. This brings to mind one of the bete noirs of the ophthalmologist. Reference is made to the patient who has wandered from refractionist to refractionist, seeking a pair of comfortable spectacles. Usually such individuals have a dozen or more pair of glasses, all approximately of the same strength, and usually indicating the presence of only a low-grade refractive error. They almost invariably have a plethora of eye symptoms which they apparently take great pleasure in reciting with infinite circumstantiality. Often the complaints have been written down and not infrequently they are couched in medical phraseology. They will readily admit to a host of symptoms inplicating other systems of the body. Some of them practically defy the oculist to provide them with a comfortable prescription for lenses. Prompt psychiatric care is invariably indicated for such hypochondriacal individuals.

The treatment of anxiety neurosis should be prompt and always directed primarily toward the goal of discovering the cause for the patient's anxiety. It is sometimes possible for the ophthalmologist, if he has established good rapport, to uncover significant psychiatric data. Judicous questioning concerning the patient's attitude toward health, employment, marital, educational, religious and family problems and difficulties may bring to light situations and conflicts which have an important bearing upon the neurosis. If meaningful information is

disclosed, the next step will be to interpret and explain to the patient his symptoms in relationship to the basic causative factors. This explanation should be couched in simple non-technical language. An attempt can then be made to persuade the patient to reorient his emotional reactions toward the cause of his apprehensiveness.

Since a fear of blindness is so commonly the focal point around which ocular psychoneuroses revolve, particularly in patients suffering from early cataract, glaucoma or macular degenerative lesions, great caution must be observed in discussing the findings to avoid aggravation of the neurosis.

In anxiety reactions of short duration, especially if a definite cause is found, the cure may often be effected at the ophthalmological level through a rational interpretation of the patient's symptoms. It is quite feasible by giving the patient insight to induce him to exhibit a healthier attitude toward his illness.

On the other hand if the ophthalmologist recognizes the anxiety reaction as one of considerable duration, if questioning concerning the usual etiological factors fails to elicit significant psychological content, upon which a therapeutic effort can be based, or if he feels himself incompetent to undertake therapy, psychiatric consultation becomes imperative. Placebos, including a prescription for glasses, except as an interim measure of dubious value, should not be resorted to by the ophthlmologist since their efficacy is but transitory and often destroys the faith of the patient.

Chronic anxiety states, particularly those which are founded upon dissociation and repression or have been initiated by conditioned stimuli will ordinarily require psychiatric consultation and management. Psychoanalytical studies or some modification or variant thereof may prove useful in the unmasking of subconscious mental processes.

Since it is well understood, particularly in the military service, that certain psychoneurotic patients derive a definite personal gain or advantage from their illness it is apparent that a cure is sometimes difficult or impossible of achievement, even after a prolonged regimen of individual psychotherapy.

As an integral phase of the intensive reconditioning program of the Army, mass or group psychotherapy was instituted for psychoneurotic patients during World War II. Lectures and group discussions, employing the question- and answer-method were widely used at general and large station hospitals. Group psychotherapeutic techniques appeared to be of definite value for mild and borderline psychoneurotics, but seemed to retard the progress and even aggravate the condition of severe psychoneurotics. Very possibly the lack of motivation, which unquestionably existed to a rather alarming degree at times, accounts for the fact that mass psychotherapy in the Army was not an unqualified success. It has undoubtedly been of value in civilian practice when conducted under the proper auspices and with the judicious selection of patients. Considering the high incidence of psychoneurosis in civilian practice it seems worthy of further trial as an ancillary measure in our efforts to promote better mental health.

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Discussion

DR. BURCH, in closing: In reply to Dr. Peppard's question. I think that is very true, individuals suffering from ocular psychoneurosis do have specific complaints which indicates that they are suffering from more than just the eye manifestations. One other remark—often oculists are not careful as to what they tell people who have a senile macular degeneration. They tell them nothing can be done. While it is true that they will lose their central field of vision and their ability to read fine print, very frequently the process is so slow that they will retain some useful vision that will help them to get about. They will not become dependent upon others for getting around. I think the same thing applies to other types of organic eye disease—one has to be extremely careful in dealing with this type of patient for fear of initiating a train of events that upsets the patient's emotional stability.

I wish to thank you for the privilege of coming here tonight and presenting this paper.

The meeting was adjourned.

A. E. CARDLE, *Secretary*

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

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apolis. The defendant charged $15 for the series of three lectures which were attended by about forty women, including two policewomen. Mrs. Evans had planned on giving another lecture, the evening following her arrest, for which she intended to charge $5 but was unable to do so. Mrs. Evans stated she came to Minneapolis, June 30, from Lead, South Dakota, and contacted a so-called health food store for the purpose of advertising their products. During her talks Mrs. Evans discussed various ailments, including diabetes, arthritis, neuritis, menstrual disorders and dietary deficiencies. The defendant would then recommend certain vitamins, medicines and health foods.

The defendant stated she was born in Jay County, Indiana, and had less than a high school education. She further stated that she had operated a millinery shop in Storm Lake, Iowa, for ten years prior to taking up health lecture work. Mrs. Evans claims to have been in health lecture work for the past fifteen years and admitted having been arrested in Indianapolis, Indiana, in 1942 on a similar charge. The defendant likewise admitted that she had no license to practice healing in any state. She was accompanied to Minneapolis by her daughter, Wanda.

Reports and Announcements

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The program for the annual meeting of the Northern Minnesota Medical Association, held August 20 and 21, in Duluth, is as follows:

Friday, August 20

"Ectopic Pregnancy, with Report of a Case of Ovarian Pregnancy" by Dr. Wilford J. Deweese, Bemidji.

"Major Points in Reading Electrocardiograms" by Dr. Arthur C. Kerkhof, Minneapolis.

"Recent Advances in Surgery of the Colon" by Dr. B. Marden Black, Rochester.

Noon Luncheon: F. Manley Brist and Dr. A. J. Chesley, speakers.

"Burns" by Dr. N. Logan Leven, Saint Paul.

"Congenital Retrolental Fibroplasia" by Dr. Earl E. Barrett, Duluth.

"Intussusception in Infancy and Childhood" by Dr. Tague C. Chisholm, Minneapolis.

"Medical Diagnosis in General Practice" by Dr. Walter C. Alvarez, Rochester.

Evening Banquet: Remarks by Dr. A. E. Cardle, president, and Dr. E. M. Hammes, president-elect, Minnesota State Medical Association. Principal address by the Honorable Joseph H. Ball, Senator from Minnesota.

Saturday, August 21

"Clinical-Roentgen-Pathological Conference" planned and arranged by Dr. Henry G. Moehring and Dr. E. L. Tuohy, Duluth.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association will be held on September 13 at Winona.

Dr. C. L. Sherman, Luverne, is president of the association, and Dr. W. A. Merritt, Rochester, is secretary. Dr. A. E. Meinert, Winona, is chairman of the local Committee on Arrangements. The following scientific program is planned:

Morning

"Three Cases of Scurvy" by Dr. Charles W. Rogers, Winona.

"Common Eye, Ear, Nose and Throat Conditions" (in Kodachrome transparencies) by Dr. George L. Loomis, Winona.

"Treatment of the Duodenal Ulcer" by Dr. James C. Cain, Rochester.

"Complications of Injuries to Blood Vessels" by Dr. James M. Janes, Rochester.

"Carcinoma of the Cervix: Treatment and Aftercare" by Dr. Hilmar R. Schmidt, Winona.

"Colles' Fractures and Their Treatment in General Practice" by Dr. Roger G. Hassett, Mankato.

"A New and Satisfactory Operation for Procidentia" by Dr. Arthur E. Benjamin, Minneapolis.

Afternoon

Case Reports:

"Perirectal Abscess Producing Symptoms of Generalized Peritonitis" by Dr. W. C. Bernstein, Saint Paul.

"Adrenal Cortex Tumor with Masculinization" by Dr. F. E. B. Foley, Saint Paul.

"Unusual Abdominal Injury" by Dr. W. E. Wilson, Northfield.

"Management of Acute Renal Failure" by Dr. Howard M. Odel, Rochester.

"Surgical Treatment of Prostatic Obstruction" by Dr. F. E. B. Foley, Saint Paul.

"Glomus Tumors" by Dr. J. Grafton Love, Rochester.

"Eye Problems in Infancy and Childhood" by Dr. V. L. Lindberg, Minneapolis.

SOUTH DAKOTA CANCER SYMPOSIUM

The South Dakota Division of the American Cancer Society, in co-operation with the South Dakota State Board of Health, is presenting a cancer symposium at the Coliseum, Sioux Falls, South Dakota, on October 11, 12 and 13. Physicians and dentists of Minnesota, Iowa, Nebraska and South Dakota are invited to attend. There is no registration fee. The following program is scheduled:

Tentative Program

October 11, 1948—Morning

9:00 A.M.

Dr. Brewster S. Miller, New York City. Assistant Medical Director, American Cancer Society.
"The American Cancer Society."
Dr. Robert L. Cherry, Kansas City, Missouri. Senior Surgeon, U. S. Public Health Service.
"Role of the Public Health Service in Cancer Control."
Dr. Cornelius P. Rhoads, New York City, Memorial Hospital.
"Present Status of Cancer Research."
Dr. John R. McDonald, Rochester, Minnesota. Pathologist, Mayo Clinic.
"Status of the Papanicolaou Stain for the Diagnosis of Cancer."
Dr. Elbert DeCoursey, Ft. Sam Houston, Texas. Colonel M.C., Chief, Laboratory Service.
"Pathological Diagnosis of Cancer."

Afternoon

2:00 P.M.

Dr. John R. McDonald, Rochester, Minnesota. Pathologist, Mayo Clinic.
"Pathology of Tumors of the Head and Neck."
Dr. Douglas Quick, New York City. Surgeon.
"Diagnosis and Treatment of Tumors of the Mouth, Accessory Sinuses and Salivary Glands."
Dr. Max Cutler, Chicago, Illinois, Oncologist—Chicago Tumor Institute.
"Radiological Treatment of Neoplasms of Head, Neck and Larynx."
Dr. Ferdinand C. Helwig, Kansas City, Missouri. Pathologist. St. Lukes Hospital.
"Special Pathology of Thyroid Tumors."
Dr. Arnold S. Jackson, Madison, Wisconsin. Surgeon—Jackson Clinic.
"Treatment of Thyroid Tumors."

Evening—Open To Laity

8:00 P.M.

Dr. Cornelius P. Rhoads, New York City.
"Future Outlook of Cancer."
Dr. Douglas Quick, New York City.
"Early Diagnosis of Cancer of Head and Neck."
Dr. Elbert DeCoursey, Ft. Sam Houston, Texas.
"The Destructive Effects of Radiation. The Modern Treatment of Cancer."

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SOUTH DAKOTA CANCER SYMPOSIUM

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October 12, 1948—Morning

9:00 A.M.

Dr. John V. Goode, Dallas, Texas. Professor Surgery, Southwestern University Medical School.
"Diagnosis and Treatment of Neoplasms of the Skin and Fascia, Including Hands and Feet."
Dr. Charles L. Martin, Dallas, Texas. Radiologist, Martin X-Ray and Radium Clinic.
"Radiological Treatment of Neoplasms of Skin."
Dr. Murray M. Copeland, Washington, D. C. Professor of Oncology, Georgetown University Medical Center.
"Benign Tumors of the Breast."
Dr. William Crawford White, New York City. Surgeon Roosevelt Hospital.
"Malignacies of the Breast."
Dr. Max Cutler, Chicago, Illinois. Oncologist, Chicago Tumor Institute.
"Radiological Treatment of Malignancies of the Breast."
Dr. Edwin Bayrd, Rochester, Minnesota. Department Medicine, Mayo Clinic.
"Lymphomas."

Afternoon

2:00 P.M.

Dr. Charles G. Johnston, Detroit, Michigan. Professor Surgery, Wayne University Medical School.
"Pre- and Post-operative Care of the Patient with Malignancy."
Dr. Ferdinand C. Helwig, Kansas City, Missouri.
"Pathology of Pulmonary and Mediastinal Tumors."
Dr. Thomas J. Kinsella, Minneapolis, Minnesota. Surgeon.
"Treatment of Pulmonary and Mediastinal Tumors."
Dr. Robert E. Fricke, Rochester, Minnesota. Radiologist, Mayo Clinic.
"Radiological Treatment of Chest Tumors."
Dr. Ernest Sachs, St. Louis, Missouri. Neuro-Surgeon, Barnes Hospital, Washington University Medical School.
"Neoplasms of Cranial Nerves, Spinal Cord and Peripheral Nerves."

Evening—Open To Laity

8:00 P.M.

Dr. William Crawford White, New York City.
"Tumors of the Breast."
Dr. Brewster S. Miller, New York City.
"The American Cancer Society and the Laity."

October 13, 1948—Morning

9:00 A.M.

Dr. Murray M. Copeland, Washington, D. C.
"Pathology of Bone Tumors."
Dr. Henry C. Marble, Boston, Massachusetts. Surgeon, Massachusetts General Hospital.
"Diagnosis and Treatment of Bone Tumors."
Dr. Charles L. Martin, Dallas, Texas. Radiologist, Martin X-Ray and Radium Clinic.
"Radiological Treatment of Bone Tumors."
Dr. Joe V. Meigs, Boston, Massachusetts Gynecologist, Vincent Memorial Hospital.
"Surgical Treatment for Cancer of the Cervix and Fundus Uteri."
Dr. Robert E. Fricke, Rochester, Minnesota. Radiologist, Mayo Clinic.
"Radiological Treatment of Carcinoma of the Cervix and Fundus Uteri."

Afternoon

2:00 P.M.

Dr. C. D. Creevy, Minneapolis, Minnesota. Professor Urology, Minnesota University Medical School.
"Diagnosis and Treatment of Malignancies of the Bladder and Prostate, Kidneys and Testicles."
Dr. Robert E. Fricke, Rochester, Minnesota. Radiologist, Mayo Clinic.
"Radiological Treatment of Malignancies of the Bladder, Prostate, Kidneys and Testicles."
Dr. Karl A. Meyer, Chicago, Illinois. Surgeon, Cook County Hospital.
"Carcinoma of the Upper Gastrointestinal Tract."
Dr. Raymond W. McNealy, Chicago. Chief Surgeon, Wesley Memorial Hospital.
"Carcinoma of the Colon and Rectum."

AMERICAN CANCER SOCIETY PUBLICATIONS

The American Cancer Society announces production of a series of illustrated monographs designed for wide distribution to general practitioners on the early recognition of cancer. These will be in brochure form profusely illustrated in color, and will be written by physicians of highest competence in their specialties.

The American Cancer Society plans to distribute these as widely as possible to physicians of our country in order to bring to mind again value of recognition of cancer by the general practitioner and his responsibility in correct diagnosis and early treatment.

These will be distributed to physicians by the American Cancer Society on a complimentary basis. The Minnesota Division of the American Cancer Society is now preparing a mailing list to receive these brochures. Any physician and surgeon in Minnesota can obtain these brochures as they are produced by writing to: Minnesota Division, American Cancer Society, Inc., 622 Commerce Bldg., St. Paul 1, Minnesota.

The American Cancer Society is publishing abstracts of current literature on cancer, prepared by the abstract section of the new journal, *Cancer*. The abstracts appear in volumes entitled "Cancer Current Literature." The first number in Volume 1 appeared in January, 1948. The publication attempts to present a listing and/or abstracts of all published research and clinical observations on cancer which have appeared throughout the world. Physicians may obtain copies upon application to the American Cancer Society, 47 Beaver Street, New York 4, N. Y.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The thirteenth annual meeting of the Mississippi Valley Medical Society at Springfield, Illinois, September 29, 30 and October 1, will feature three full days of lectures and exhibits by members of the faculty of a large group of the leading medical schools and hospitals of this country. The medical schools represented include, Washington University, St. Louis University, University of Chicago, University of Minnesota, Northwestern University, University of Illinois, State University of Iowa, Baylor University and Loyola University. The entire scientific program and forty technical and scientific exhibits have been planned to appeal to the physician in general practice.

No registration fee will be charged, and every ethical physician is cordially invited to attend. The entire meeting will be held in the Abraham Lincoln Hotel. A detailed program may be obtained from the Secretary, Harold Swanberg, M.D., 209-224 W.C.U. Bldg., Quincy, Illinois.

MISSISSIPPI VALLEY MEDICAL EDITORS' ASSOCIATION

The fifth annual meeting, Mississippi Valley Medical Editors' Association, will be held at the Hotel Abraham Lincoln, Springfield, Illinois, September 29. This will probably be the last meeting under the above title, as the Association's purpose will be enlarged and its constitution revised at Springfield. President Vincent T. Williams, of Kansas City, Mo., Editor, *Jackson County Medical Society Weekly Bulletin*, will preside. In the afternoon, Dr. Morris Fishbein, Editor, *Journal American Medical Association*, will give a course in medical writing. There will be a fellowship hour, dinner and speakers in the

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In Memoriam

FRANK J. ANDERSON

Dr. Frank J. Anderson, of Minneapolis, died June 25, 1948, at the age of fifty-eight.

Dr. Anderson was born at Ellsworth, Wisconsin, March 29, 1890. He received his medical degree at the University of Minnesota in 1917 and interned at the Minneapolis General Hospital. Postgraduate work in x-ray diagnosis was taken in Chicago and Washington. He served in World War I, from 1917 to 1920, when he began practice in Minneapolis. He had been in charge of the X-Ray Department at Deaconess Hospital, Minneapolis, since 1921.

He was a member of Hennepin County Medical Society, the Minnesota State and American Medical Associations. He also served in World War II and was a member of the Navy-Marine post of the American Legion and the Halverson Bowers post of Veterans of Foreign Wars.

Dr. Anderson is survived by his widow, two sons, Dr. Frank J. Anderson, Jr., and Robert L. Anderson, and two brothers, Alfred and Oscar W. Anderson, all of Minneapolis.

LUTHARD N. BERGH

Dr. L. N. Bergh, a practitioner at Montevideo, Minnesota, for about forty years, died suddenly of a heart attack on June 2, 1948.

Dr. Bergh was born in Yellow Medicine County, Minnesota, on September 27, 1880. He acquired a B.A. degree from Augsburg College, Minneapolis, in 1902, and an M.D. degree from the University of Minnesota in 1906. He interned at the Ancker Hospital, Saint Paul.

He was Division Surgeon for the Chicago, Milwaukee and Saint Paul Railway, a member of the Camp Release County Society, the Minnesota State and American Medical Associations, and was prominent in the affairs of his community.

Dr. Bergh is survived by his widow, a son, Dr. George Bergh, and a daughter, Dr. Solveig Bergh, and two grandchildren, all of Minneapolis.

DANIEL BENJAMIN MARK

Dr. D. B. Mark, son of the late Dr. Joseph Mark, a pioneer Minneapolis physician, died on July 4, 1948, after practicing in Minneapolis for thirty-four years.

Born in Saint Paul, July 16, 1886, Dr. Mark received his medical degree from Barnes Medical College, Saint Louis, Missouri, *summa cum laude,* in 1909. He interned at Asbury Hospital, Minneapolis, and took postgraduate work at the University of Minnesota in 1912.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, the American Academy of General Practice, the American College of Physicians and Surgeons, and a Fellow of the International College of Surgeons. He was a staff member of Asbury and Eitel Hospitals. He was also a Mason, a charter member of the Standard Club and a board member of Adath Jeshurun Cemetery Association.

Dr. Mark is survived by his wife, a son, Dr. Vernon Hershel Mark of Minneapolis, and a sister, Mrs. Henry Crain of Mobile, Alabama.

ARTHUR E. NICHOLS

Dr. Arthur E. Nichols, for many years a practitioner in Saint Paul, passed away March 20, 1948, at the age of eighty-three. He had been Deputy Health Commissioner from 1921 until his death. Dr. Nichols was born in Salem Township, Olmsted County, Minnesota, on December 15, 1864. Preliminary education was obtained at Fergus Falls.

After having been Assistant Postmaster in Fergus Falls for a number of years, he moved to Winnipeg, where he attended Manitoba Medical College for three years. He then went to Chicago, where he graduated from Bennett Medical College in 1900. Internship was served at Cook County Hospital in Chicago.

In 1901 Dr. Nichols came to Saint Paul, where he has practiced since, serving as Deputy Coroner for one year, Director of Hygiene in the public schools for a year, Medical Inspector in the Health Department for two years, and Deputy Health Commissioner from 1921 to the time of his death.

He was a member of the Ramsey County Medical Society, the Minnesota State and American Medical Associations; he was a member of the Masonic Order and a communicant of Saint Clements Episcopal Church.

Dr. Nichols was married January 9, 1901, to Emily Wagner. He is survived by his widow and seven children, John T. Nichols of Baltimore, George Nichols of Los Angeles, Mrs. James Lee Ryan of Springfield, Missouri, Mrs. Conrad Nordquist of Minneapolis, Mrs. John D. Vars, Mrs. E. G. Nattrass and Janet Nichols, all of Saint Paul.

Dr. Nichols was unassuming and retiring by nature, but he maintained the respect and affections of his many lay and professional friends.

EUBERT V. SIMONS

Dr. Eubert V. Simons of Spring Valley, Minnesota, died May 28, 1948, at the age of seventy-four.

Dr. Simons was born April 26, 1874, in Sparta, Michigan. He was a graduate of the Medical and Surgical school of Keokuk, Iowa. Following his graduation in 1903, he practiced in Etna until 1914, when he moved to Spring Valley. With Dr. Cyrus Eby, he operated a hospital in Spring Valley from 1916 to 1925.

He was a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations.

Dr. Simons is survived by his widow, the former Neva Postle, and one son, Captain Lyle Simons of Fort Sheridan, Illinois. A second son, Fred, died in 1921.



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Of General Interest

It was announced in June that Dr. William Reid had sold his residential property in Deerwood and at the time was living with his son in Grand Rapids.

* * *

The marriage of Dr. David Turner Carr, Rochester, to Miss Rosemary Rudow, Jackson, was announced early in July.

* * *

After a year of postgraduate work in medicine and surgery at the University of Minnesota, Dr. C. L. Roholt resumed his practice in Waverly on July 1.

* * *

Dr. Roy N. Andrews, Mankato, was one of the Minnesota physicians who attended a meeting of the American Academy of Pediatrics in Milwaukee late in June.

* * *

Dr. Joseph W. Goldsmith has opened offices at 223 Lowry Medical Arts Building, Saint Paul, for the practice of obstetrics and gynecology.

* * *

Dr. Raphael J. Weisberg announces that he has opened offices at 620 Medical Arts Building, Minneapolis, for the practice of internal medicine.

* * *

A paper entitled "Basic and General Principles in the Recognition and Treatment of Fractures" was presented by Dr. Vernon L. Hart, Minneapolis, at the annual meeting of the Upper Peninsula Michigan Medical Society on June 27.

* * *

Dr. C. H. Scheifley, Rochester, spoke at a meeting of the Syphilis Study Section of the Cardiovascular Study Section of the National Institute of Health in Baltimore, Maryland, on June 25.

* * *

At a meeting of the American Academy of Pediatrics in Milwaukee, Wisconsin, on June 28, Dr. Benjamin Spock, Rochester, spoke on "Discipline, Spoiling and Self-Regulation."

* * *

At a meeting of the Rochester Kiwanis Club on June 17, Dr. Viktor Wilson, Rochester city health officer, discussed plans and financing of a proposed community health center.

* * *

After two years of association with the St. Cloud Clinic, Dr. Sidney Stenerodden began a three-year fellowship in otolaryngology at the University of Minnesota on July 1.

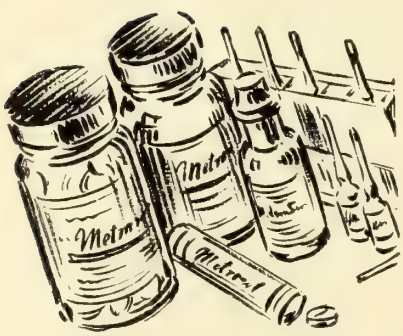
* * *

Dr. Donald Anderson, formerly of Lamberton, has become associated in practice with Dr. O. J. Seifert of

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AMERICAN CANCER SOCIETY
in co-operation with the
SOUTH DAKOTA STATE BOARD of HEALTH

● *See Page 924 for Resume of Symposium*

New Ulm. Dr. Anderson is maintaining office hours in Lamberton on Saturday afternoons and several evenings each week.

* * *

Announcement was made early in June that Dr. Wesley Spink, professor of medicine at the University of Minnesota, had been appointed to the board of governors of the American College of Physicians.

* * *

A free tuberculosis-examination clinic was held in South Saint Paul on July 8 under the supervision of Dr. Karl Pfuetze, superintendent of Mineral Springs Sanatorium.

* * *

In June, Dr. W. H. Sutherland, Benson, became the president of the Swift County Public Health Association, replacing Dr. C. L. Scofield who had resigned because of ill health.

* * *

Dr. M. M. Hargraves, Rochester, is one of twenty-eight Minnesota residents listed by the Minnesota Historical Society as available as speakers at centennial celebrations in Minnesota next year.

* * *

Dr. Henry E. Michelson, Minneapolis, has been invited to be a guest speaker at a meeting of the Michigan State Medical Society in Detroit on September 22. He also has been invited to address the Indiana State Medical Association at a meeting in Indianapolis on October 25.

After completing his military service on June 16, Dr. R. F. Deranleau became associated in practice with Dr. Paul N. Larson and Dr. William B. Stromme in the Medical Arts Building, Minneapolis.

* * *

It was announced early in June that Dr. Harold Henry, brother of Dr. C. J. Henry and Dr. J. E. Henry of Milaca, was planning to locate in Hinckley to replace Dr. C. G. Kelsey who intended to retire in July.

* * *

During the middle of June, Dr. J. C. Klein, Shakopee, flew to Chicago to attend the annual meeting of the American Geriatrics Association which was held for three days in that city.

* * *

Dr. Robert N. Barr has succeeded Dr. Viktor O. Wilson as chief of the section of special services of the Minnesota Department of Health. Dr. Barr was formerly chief of the section of departmental administration. Dr. Wilson is now city health officer in Rochester.

* * *

Dr. M. C. Petersen, superintendent of the Rochester State Hospital, flew to Europe in June to visit relatives in Denmark, his birthplace, and to inspect mental hospitals in the Scandinavian countries and in Switzerland.

* * *

Dr. S. A. Slater, who has been superintendent of the Southwestern Minnesota Sanatorium in Worthington for the past thirty years, recently was re-elected to the



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board of the National Tuberculosis Association for another two-year term. He has been a director of the organization for twenty years.

* * *

Dr. William A. Butcher, formerly of Downey, Illinois, arrived in Stewartville in June to spend six months in association with Dr. A. F. Risser. On January 1, 1949, Dr. Butcher will become affiliated with the Mayo Clinic in Rochester.

* * *

Formerly of Archbold, Ohio, Dr. William L. Lorton has become resident physician at Hibbing General Hospital. He succeeds Dr. Walter W. Kelly, who left to open a practice in California. Dr. Lorton is a graduate of the University of Chicago Medical School.

* * *

The Washington County chest x-ray survey, which began on July 22, will continue through September 30, with headquarters in the armory at Stillwater. In charge of the survey is Dr. Hilbert Mark, tuberculosis division, Minnesota Department of Health.

* * *

Dr. R. A. MacDonald, Littlefork, was married in Duluth on June 15 to Miss Barbara Bramer, formerly a nurse at St. Luke's Hospital, Duluth. Dr. MacDonald is now associated in medical practice with Dr. R. D. Hanover at Littlefork.

* * *

Two former Mayo Foundation fellows were recently advanced to higher academic positions. Dr. Brown M. Dobyns was made assistant professor of surgery at the Harvard Medical School, and Dr. R. D. Harley was appointed associate professor of ophthalmology at Temple University School of Medicine.

* * *

On July 15, Dr. Marcus A. Keil joined the staff of the Mankato Clinic. A graduate of the University of Iowa in 1940, Dr. Keil interned at Miller Hospital, Saint Paul, before entering the army in 1941. Following his army service, he completed a three-year fellowship in internal medicine at the University of Minnesota.

* * *

A former Sanborn resident, Dr. John Yaeger, who was discharged from military service in July, has become the assistant of Dr. R. J. Cairns in Redwood Falls. Dr. Yaeger will be in Redwood Falls during the absence of Dr. James B. Flynn, who is spending a year at the General Hospital in Louisville, Kentucky.

* * *

During June, Dr. Charles G. Sheppard of Hutchinson traded office space with Dr. R. I. Sheppard, dentist, in a Hutchinson office building. Purpose of the trade was to provide more convenient facilities when Dr. Donald Tatum joined Dr. Charles Sheppard on July 1. Both office suites were completely redecorated in the process.

* * *

Candy suckers were used as bribes to promote cooperation as rural St. Louis County youngsters went through the annual health "roundup" during June. Sponsored by the county health department, the "round-

up" provided complete physical examinations and inoculations for the rural children, with the candy persuader helping to expedite the process.

* * *

Dr. J. A. Broberg, Blue Earth, who practiced medicine in Faribault County for fifty years before his retirement in 1942, celebrated his eighty-sixth birthday anniversary on July 5. A graduate of the University of Michigan in 1892, Dr. Broberg began his practice at the age of thirty, living first in Delavan and later in Blue Earth.

* * *

On July 1, Dr. Adrian H. Bodelson became associated in practice with Dr. H. E. Drill in Hopkins (Minneapolis suburb). A graduate of the University of Minnesota Medical School in 1946, Dr. Bodelson interned at St. Mary's Hospital, Duluth, and served for one year as a resident physician in Abbott Hospital, Minneapolis.

* * *

Announcement has been made that Dr. Leo B. Froke has become associated in practice with Dr. F. C. Westerman in Montgomery. A graduate of North Dakota University and the Bowman Gray Medical School in Winston-Salem, N. C., Dr. Froke served his internship at St. Mary's Hospital, Minneapolis, before enlisting in the army in 1942. After four years of active duty, he was assigned to the Veterans Hospital in St. Cloud, where he remained until discharged from service in June.

Dr. E. O. Nimlos, Stephen, left for the West Coast on June 20 to attend the National Red Cross Conference in San Francisco and to enjoy a vacation trip along the Pacific coastline. During his absence his practice was conducted by his son, Dr. Kenneth O. Nimlos, who was discharged from the army about the middle of June.

* * *

The Oliver Clinic in Graceville acquired a new staff physician during the middle of July when Dr. George Louis Barnett arrived from Sioux Fall, South Dakota, to begin his practice in Graceville. A graduate of Creighton University in Omaha, Nebraska, Dr. Barnett served his internship at St. Joseph's Hospital, Omaha.

* * *

Among Minnesota physicians who attended the sixth biennial continuation course in otolaryngology at the University of Minnesota June 28 through July 2, were Dr. R. H. Monahan, International Falls; Dr. John H. Cameron, Crookston; Dr. Joseph L. Arko and Dr. Andrew Sinamark, Hibbing; Dr. Joseph B. Gaida, St. Cloud, and Dr. J. Donald Sjoding, Mankato.

* * *

Announcements of changes in office addresses were recently made by four Minneapolis physicians. Dr. Wilfred J. Bushard is now located at 1750 Medical Arts Building, Dr. Dale H. Correa is at 612 Medical Arts Building, Dr. Roy A. Hoffman is at 2802 E. Forty-



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second Street, and Dr. Julien V. Petit is located at 1111 Nicollet Avenue.

* * *

Main speaker at a meeting of the Pipestone County Public Health Nursing Advisory Committee, held in Pipestone on June 14, was Dr. Percy T. Watson, director of the division of local health services of the Minnesota Department of Health.

* * *

The honorary degree of Doctor of Science was conferred upon Dr. Alfred W. Adson, Rochester, at graduation exercises held at St. Olaf College, Northfield, on June 7.

* * *

Dr. H. L. Bair and Dr. C. F. Lake, Rochester, each presented two papers at a meeting of the Wisconsin Eye, Ear, Nose and Throat Society held in Eau Claire July 10 and 11. The titles of Dr. Bair's papers were "Comments on Ocular Surgery" and "Management of Uveitis." Dr. Lake's subjects were "Management of Vasomotor Rhinitis" and "Mucoceles and Pyoceles of the Frontal and Ethmoid Paranasal Sinuses."

* * *

"Let's Talk About Health," the regular health broadcasts of Dr. Donald A. Dukelow over Station KUOM, can be heard each Monday at 11:15 a.m. This new broadcast time became effective August 2. The broadcasts are sponsored by the Community Chest and Council of Hennepin County and by the University of Minnesota. Dr. Dukelow discusses both personal and community health.

* * *

Dr. John P. Dahlstet, formerly of Saint Paul, opened offices for the practice of medicine in North Mankato early in July. He planned to conduct a general practice with some specialization in internal medicine.

A graduate of the University of Nebraska Medical School in 1943, Dr. Dahlstet served an internship and residency at Miller Hospital, Saint Paul. For the past two years he was associated in practice with Dr. J. N. Gehlen, Saint Paul.

* * *

Dr. William T. Peyton, director of the division of neurosurgery in the University of Minnesota Medical School, was a speaker at the International Congress of Psychosurgery in Lisbon, Portugal, on August 6. He spoke on the subject, "Lobectomy in Schizophrenia."

A week earlier, in Paris, Dr. Peyton addressed the staff of the Hospital de la Salpetriere, speaking on "Fluorescein, Di-iodo-fluorescein and Its Isotopes in the Diagnosis of Brain Tumor."

* * *

Roentgen Studies of the Lungs and Heart, a book recently published by the University of Minnesota Press, consists of a series of lectures delivered at the University of Minnesota by Dr. Nils Westermark, associate professor of radiology in the Caroline Institute at the University of Stockholm and director of the department of radiology at St. Goran's Hospital, Stockholm. The pro-



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fusely illustrated volume was edited by Dr. Leo G. Rigler, chief of the department of radiology and physical therapy at the University of Minnesota.

* * *

After hoping for twenty years to make the journey, Dr. Swan Ericson and his family left Le Sueur on June 4 for a two-and-one-half-month trip through Sweden. Dr. Ericson came to the United States from Sweden in 1908 at the age of nineteen, unable to speak English. By 1919 he had graduated from the University of Minnesota Medical School. He has practiced at Le Sueur since 1922, hoping to return some day to Sweden to visit his relatives. This summer he achieved that goal.

* * *

Dr. Joseph L. Whelan, Minneapolis, was married on June 12 to Miss Gloria Ann Rewaldt of Gross Pointe Farms, Michigan. The wedding took place in Detroit. A former resident of Chisholm and a graduate of the University of Minnesota Medical School, Dr. Whelan has served for three years in the Army Air Forces and has taken postgraduate work at the University of Pennsylvania Hospital and at Wayne University College of Medicine. At present he is on the resident staff of the University of Minnesota Hospitals and the Veterans Hospital, Minneapolis.

* * *

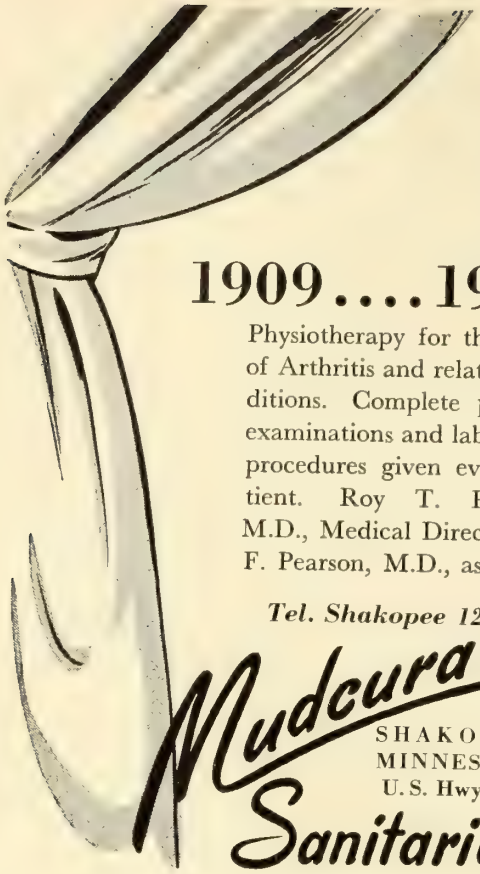
On July 17, Dr. Wesley W. Spink, professor of medicine at the University of Minnesota, flew to Mexico City to survey the brucellosis problem in Mexico and to help set up a model center for the treatment of human brucellosis by the recently developed streptomycin-sulfadiazine method. Working with Dr. M. Ruiz Castaneda, director of brucellosis control for Mexico's Department of Health, Dr. Spink planned to try the new treatment on 100 of the most difficult cases of brucellosis melitensis available. The project was under the auspices of the National Research Council and the National Institute of Health.

Dr. Spink has been invited to discuss the streptomycin-sulfadiazine treatment, which was developed at the University of Minnesota, at a meeting of Central and South American physicians in Cordoba, Argentina, late in November.

* * *

A medical symposium highlighted the program of the Eighth District Federation of Women's Clubs at a meeting in Buhl on June 29. With the theme, "A Healthier Tomorrow," five physicians presented talks on various phases of medicine. The program, which was arranged by the Minnesota Public Health Association, was as follows:

Dr. Mario Fischer, Duluth, presided and also spoke on "A New Day in Tuberculosis Control." Dr. Earl Barrett, Duluth, presented "Health of the Preschool and School Child," and Dr. Clarence Jacobson, Chisholm, discussed "Contagious Diseases—Then and Now." Dr. Frank Hirschboeck, Duluth, described "New Medical Discoveries," and Dr. E. L. Tuohy, Duluth, spoke on "Geriatrics or Treating of the Aged Population."



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HOSPITAL NEWS

Appointment of eight International Falls physicians to the medical staff of the new Falls Memorial Hospital was announced on July 1. Dr. M. E. Withrow, oldest practicing physician in International Falls, was named chief of staff. The other staff members named were Dr. W. F. Cantwell, Dr. C. C. Craig, Dr. D. M. Potek, Dr. F. G. Chermak, Dr. R. H. Monahan, Jr., Dr. E. B. Kinports and Dr. F. H. Walter.

* * *

New superintendent of St. Luke's Hospital, Saint Paul, is Miss Helen Lueck, a University of Minnesota graduate with degrees in nursing education and hospital administration. During the war Miss Lueck served in the South Pacific area for three years as an army nurse with the rank of captain. Her brother, Dr. Wallace Lueck, is a resident physician in pediatrics in Minneapolis General Hospital.

* * *

BLUE SHIELD NEWS

No. persons covered by Blue Shield as of July 15, 1948	30,000
No. Blue Shield cases paid on July 15, 1948	272
Total for 1948	825
Amount paid on Blue Shield cases on July 15, 1948	$ 9,687.23
Total for 1948	$30,173.39

Recently the Blue Shield office has received many requests from physicians throughout the state for Medical Service Report forms to report cases on *hospitalized patients*. As a result of these requests we would like to explain our reason for not complying.

At the present time a Blue Shield claim is originated in one of the two ways:

1. If the Blue Shield subscriber is hospitalized, the claim is originated from the Blue Cross hospital admission notice.
2. If the Blue Shield subscriber receives Blue Shield services outside of the hospital, the claim is to be originated by the attending physician on a form provided him for that purpose.

Now to go into detail:

When a Blue Shield, Blue Cross subscriber is admitted to a hospital, that hospital sends an admission notice to the Blue Cross office, and a copy of this notice is sent to the Blue Shield office. From this notice the Blue Shield office can start the claim as all the information necessary is on it: the patient's name, name of hospital, physician's name, date of admission, admission diagnosis, etc. This information is transcribed onto a Medical Service Report form that is sent to the attending physician for his completion. This method is used because by the Blue Shield office's completing the form, with the exception of the diagnosis, service and date of discharge from the hospital, the amount of book work on the part of the physician is reduced. Also, this method speeds up the paying of Blue Shield cases for in many instances the hospital report is in before the physician would have a chance to send this office the information.

The case for the Blue Shield subscriber that is treated out of the hospital must be originated by the physi-

ian on a Home and Office Medical Service Report form. This form requires more filling out because only the ubscriber and physician have the information this office eeds. Please do not complete a Home and Office, Medial Service Report form when the patient is hospitalized, or it will mean that we have probably sent out a form overing that hospitalization, and thus duplicate work s done.

This article is taken in part from the Manual that vas sent to all participating Doctors of Medicine. For urther details on handling claims the reader is referred o the above-mentioned Manual.

DISTRICT HEALTH OFFICES

The entire state of Minnesota is now supplied with district offices of the State Department of Health. The wo newest districts, Numbers 7 and 8, were opened during July. Headquarters for District 7 are at Fergus Falls and for District 8 at Little Falls.

Dr. E. J. Simons of Swanville has been appointed half-time health officer and director for District No. 8. As yet no health officer has been found available for District No. 7. Mr. Frederick F. Heisel, public health engineer, is temporarily in charge of that district.

Following are the directors, counties included, and headquarters for each public health district:

District 1.—Director, Dr. George Miners, Bemidji; counties included: Beltrami, upper Cass, Clearwater, Hubbard, Itasca, Kittson, Koochiching, Lake of the Woods, Mahnomen, Marshall, Pennington, Polk, Red Lake and Roseau; headquarters in Court House, Bemidji.

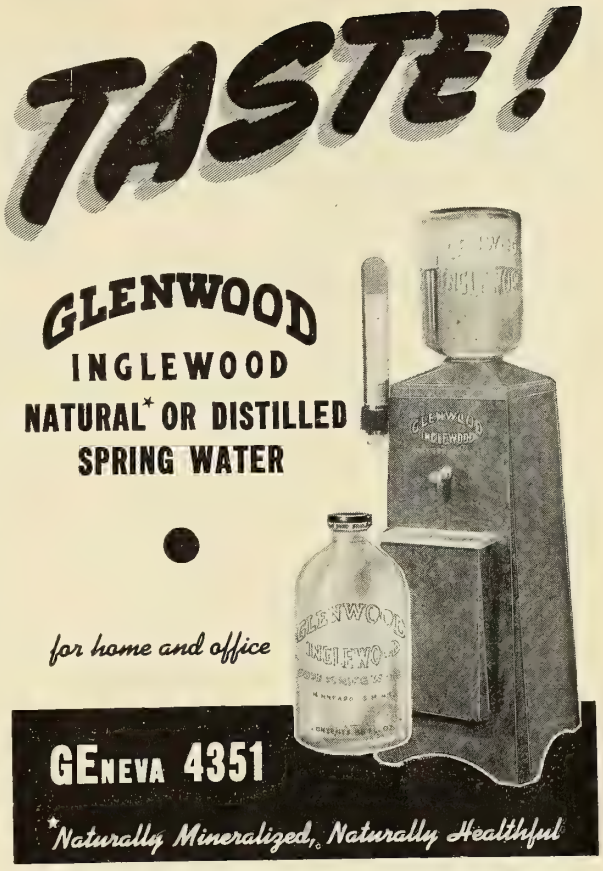
District 2.—Director, Dr. A. G. Liedloff, Mankato; counties included: Blue Earth, Brown, Carver, Faribault, Le Sueur, Martin, McLeod, Nicollet, Scott, Sibley, Waseca, Watonwan; headquarters, Court House, Mankato.

District 3.—Acting director, Dr. V. O. Wilson, Rochester; counties included: Dodge, Fillmore, Freeborn, Goodhue, Houston, Mower, Olmsted, Rice, Steele, Wabasha, Winona; headquarters, Room 212, City Hall, Rochester.

District 4.—Acting director, Dr. Mario McC. Fischer, Duluth; counties included: Aitkin, Carlton, Cook, Lake, Pine, St. Louis; headquarters, Room 115, Court House, Duluth 2.

District 5.—Acting director, Dr. B. O. Mork, Jr., Worthington; counties included: Chippewa, Cottonwood, Jackson, Lac qui Parle, Lincoln, Lyon, Murray, Nobles, Pipestone, Redwood, Renville, Rock, Yellow Medicine; headquarters, Court House, Worthington.

District 6.—Director, Dr. A. B. Rosenfield, Minneapolis; counties included: Anoka, Chisago, Dakota, rural Hennepin, Isanti, Kanabec, rural Ramsey, Washington, Wright; headquarters, State Board of Health Building, University Campus, Minneapolis 14.



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$20,000.00 accidental death. $100.00 weekly indemnity, accident and sickness	$32.00 Quarterly

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District 7.—Counties included: Becker, Big Stone, Clay, Douglas, Grant, Norman, Otter Tail, Pope, Stevens, Swift, Traverse, Wilkin; headquarters, Court House, Fergus Falls.

District 8.—Acting director: E. J. Simons, Swanville; counties included: Benton, lower Cass, Crow Wing, Kandiyohi, Meeker, Mille Lacs, Morrison, Sherburne, Stearns, Todd, Wadena; headquarters, Court House, Little Falls.

MISSISSIPPI VALLEY MEDICAL EDITORS' ASSOCIATION

(Continued from Page 926)

evening, including Dr. Fishbein of Chicago and Dr. Waltman Walters of Rochester, Minn., Editor-in-Chief of *Archives of Surgery* and the Lewis-Walters' *Practice of Surgery.*

The meeting will be held during the thirteenth annual convention of the Mississippi Valley Medical Society. All ethical physicians and those interested in medical writing are cordially invited. Non-members will be charged a small fee for the afternoon course in medical writing; there is no registration fee for the evening session. Write Harold Swanberg, M.D., Secretary, W.C.U. Bldg., Quincy, Illinois, for a complete program.

Cook County Graduate School of Medicine
ANNOUNCES CONTINUOUS COURSES

SURGERY—Intensive Course in Surgical Technique, two weeks, starting September 27, October 25, November 29.
Surgical Technique, Surgical Anatomy and Clinical Surgery, four weeks, starting September 13, October 11, November 8.
Surgical Anatomy and Clinical Surgery, two weeks, starting September 27, October 25, November 22.
Surgery of Colon and Rectum, one week, starting September 20, October 18.
Surgical Pathology every two weeks.
FRACTURES AND TRAUMATIC SURGERY—Intensive Course, two weeks, starting October 25.
GYNECOLOGY—Intensive Course, two weeks, starting September 13, October 11.
Vaginal Approach to Pelvic Surgery, one week, starting September 27, October 25.
OBSTETRICS—Intensive Course, two weeks, starting September 27, October 25.
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PRACTICE OF ALLERGY. Second Edition. Warren T. Vaughan, M.D., Richmond, Va. Revised by J. Harvey Black, M.D., Dallas, Texas. 1132 pages. Illus. Price $15.00, cloth. St. Louis: C. V. Mosby Co., 1948.

PRINCIPLES GOVERNING EYE OPERATING ROOM PROCEDURES. Emma I. Clevenger, R.N. Supervisor, Eye Operating Room, New York Eye and Ear Infirmary, New York City. 215 pages. Illus. Price $5.50, cloth. St. Louis: C. V. Mosby Co., 1948.

MR. PRESIDENT—HOW IS YOUR HEALTH? Karl C. Wold, M.D., Saint Paul and Minneapolis: Bruce Publishing Company, 1948. Price $3.00.

To anyone, physician or layman, who has even a small amount of interest in history, this comparatively small volume of 214 pages, written by Dr. K. C. Wold, a well-known oculist of Saint Paul, will prove interesting reading.

The volume represents many hours of research, and the assembling of material has been the author's main hobby for a number of years. He has avoided the use of unnecessary medical or technical terms, or has explained those used, so that the text is fully understandable for the non-medical reader. It should appeal to the laity as well as those interested in medicine and allied fields.

SYNOPSIS OF NEUROPSYCHIATRY. Lowell S. Selling, M.D., Ph.D., D.P.H., F.A.C.P. 561 pages. Illus. Price $6.50. St. Louis: The C. V. Mosby Co., 1947.

This is the second edition of Dr. Selling's book which outlines in a brief but helpful manner the various, most common neuropsychiatric disorders. Though of necessity brief, it considers the various syndromes and symptom complexes in an orderly fashion.

The section on neurology reviews the basic anatomy of the nervous system by way of foundation for the later consideration of neurological diseases which are divided into conditions affecting (1) the peripheral nervous structures, (2) the spinal cord, (3) the brain stem, (4) the cranial nerves, (5) the cerebellum, (6) the cerebrum, (7) the meninges, (8) the antonomic and sympathetic nervous system, (9) a chapter dealing with disorders of symbol use, which is an additional chapter in this edition describing disorders of speech and expression, (10) the convulsive states and (11) muscle syndromes.

The section on mental disorders discusses Basic Principles, the General Etiology of Mental Diseases, Symptomatology of Mental Disease, Neurosyphilis, Alcoholism, Drug Addiction, the Psychoses, the Psychoneuroses, Psychopathic Personality, Psychosomatic Medicine, Behavior Disorders of Childhood, and Mental Deficiency.

The chapter on psychiatric treatment is one of the best, in that it follows no one school but attempts to consider therapy from an over-all viewpoint, giving fair consideration to the psychoanalytic, psychobiologic and physiologic schools of psychiatry.

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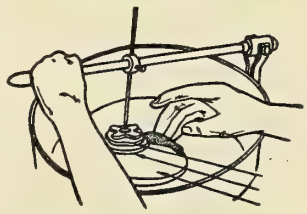
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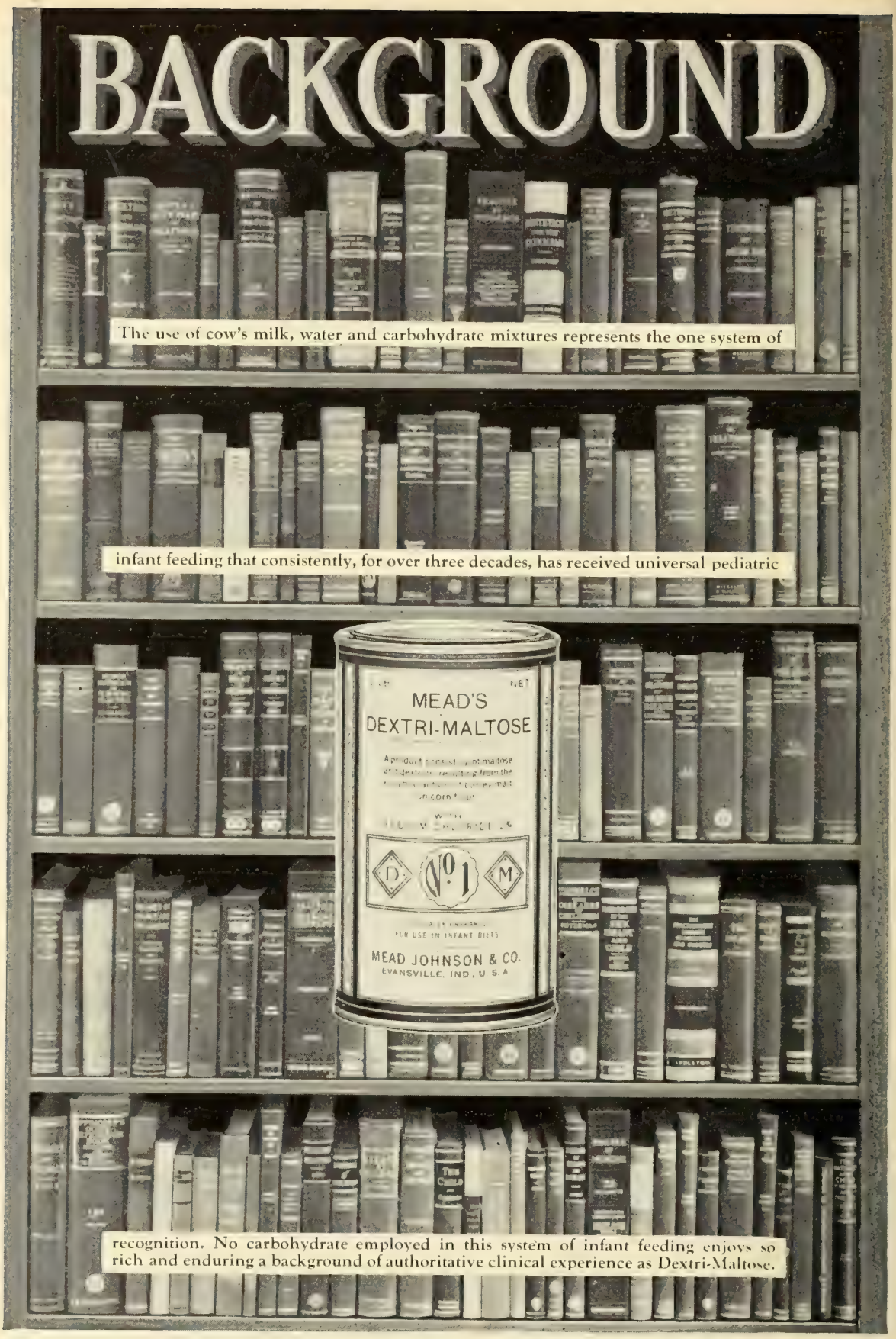
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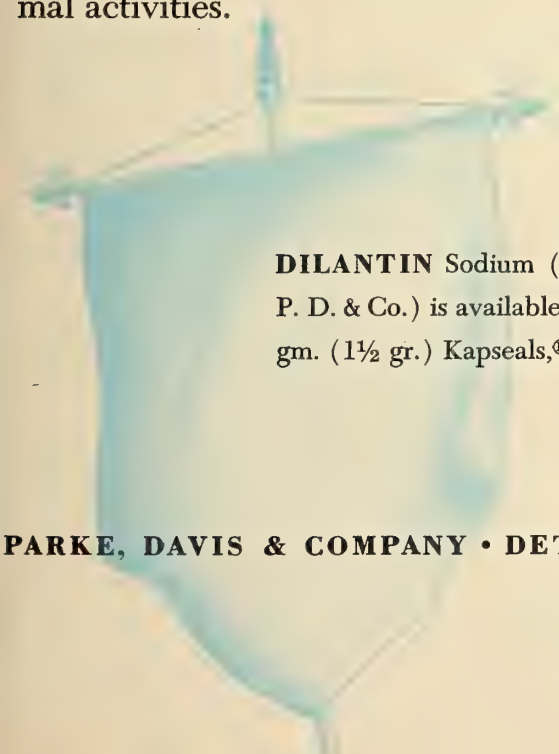
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Volume 31 **September, 1948** **No. 9**

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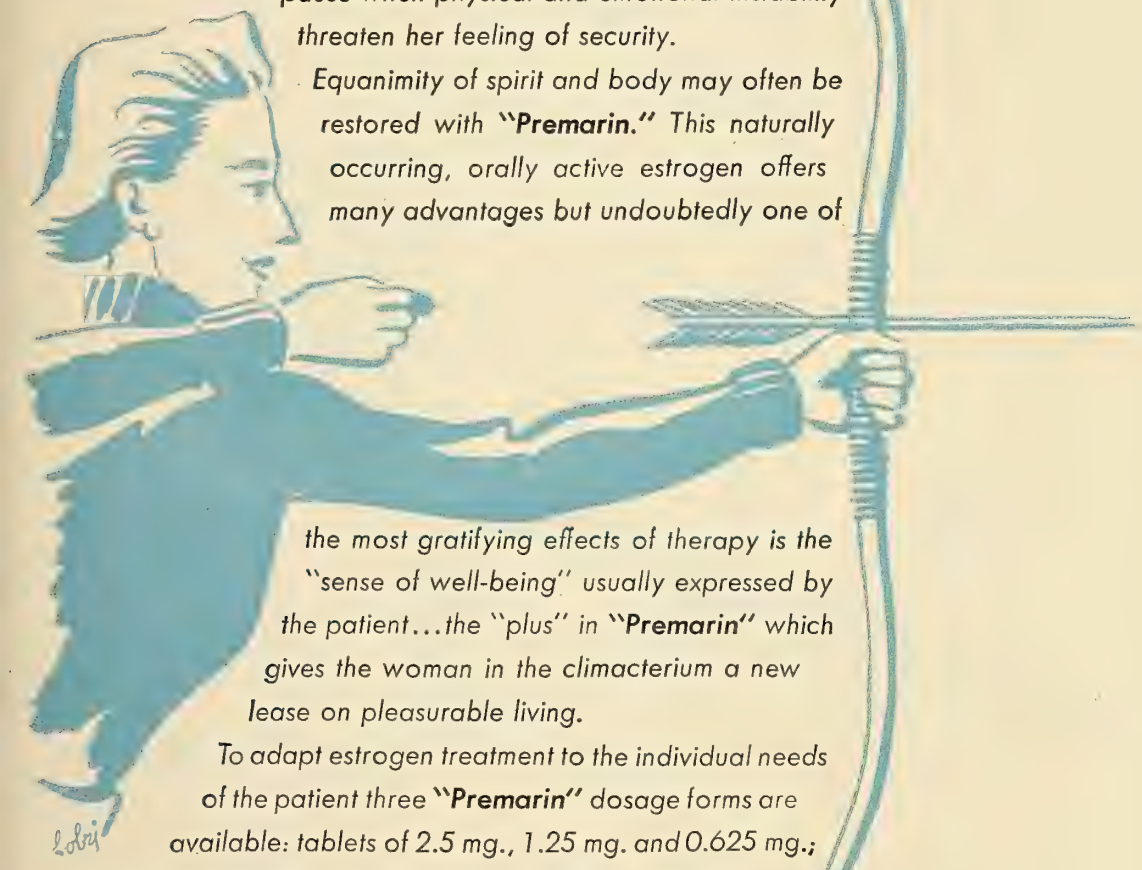
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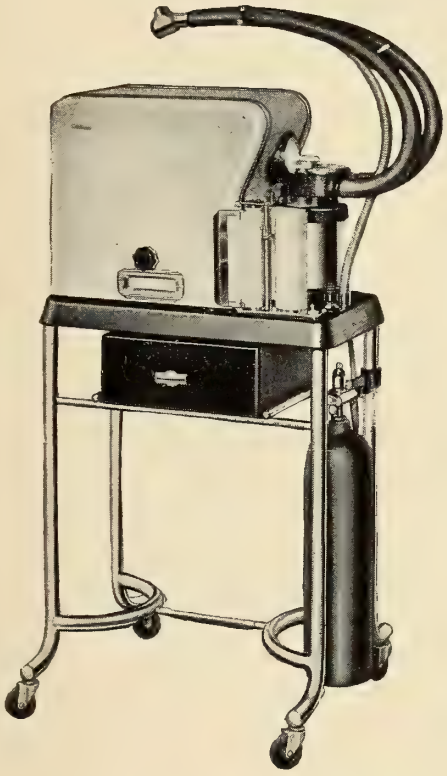
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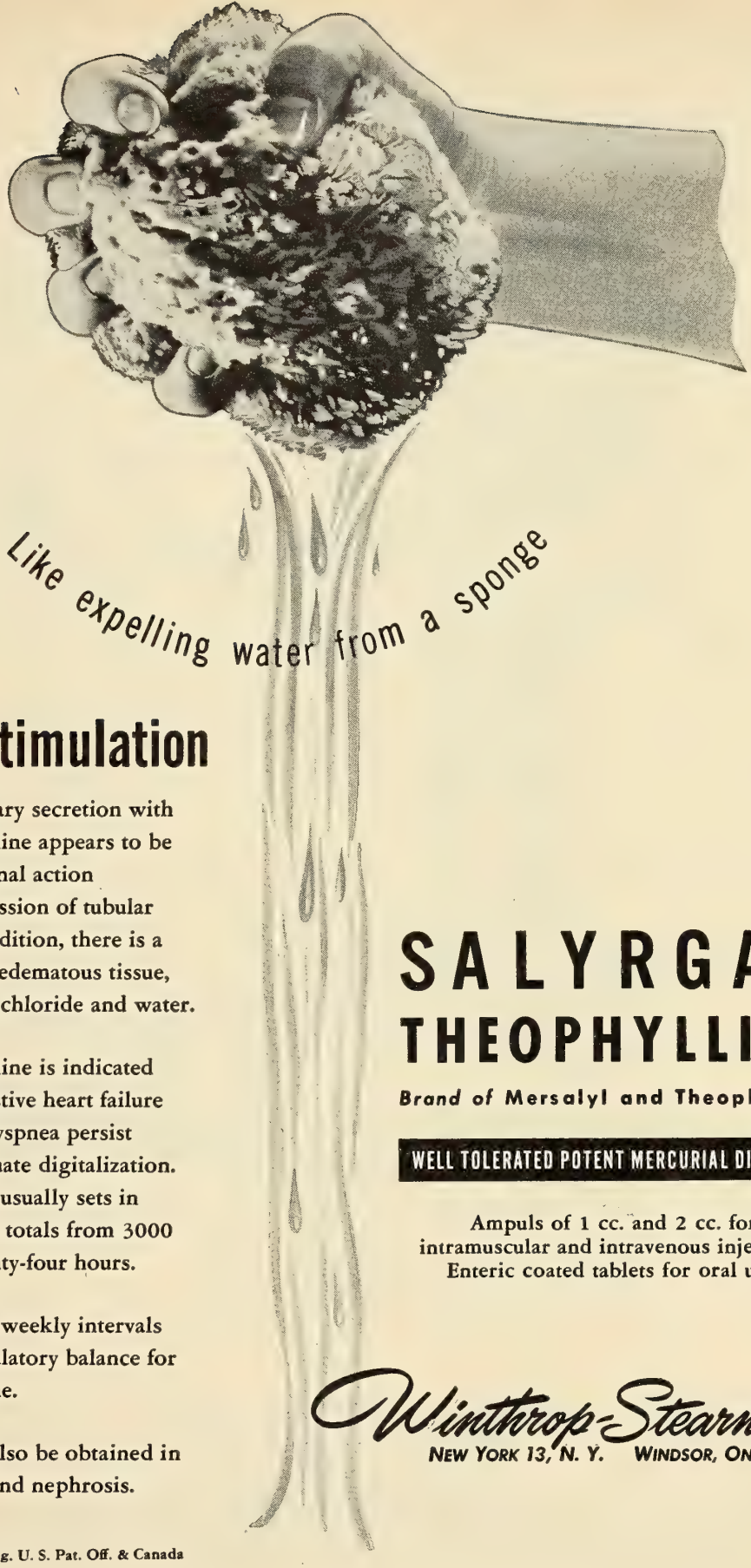
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Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32-241; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. 11, 590-592.



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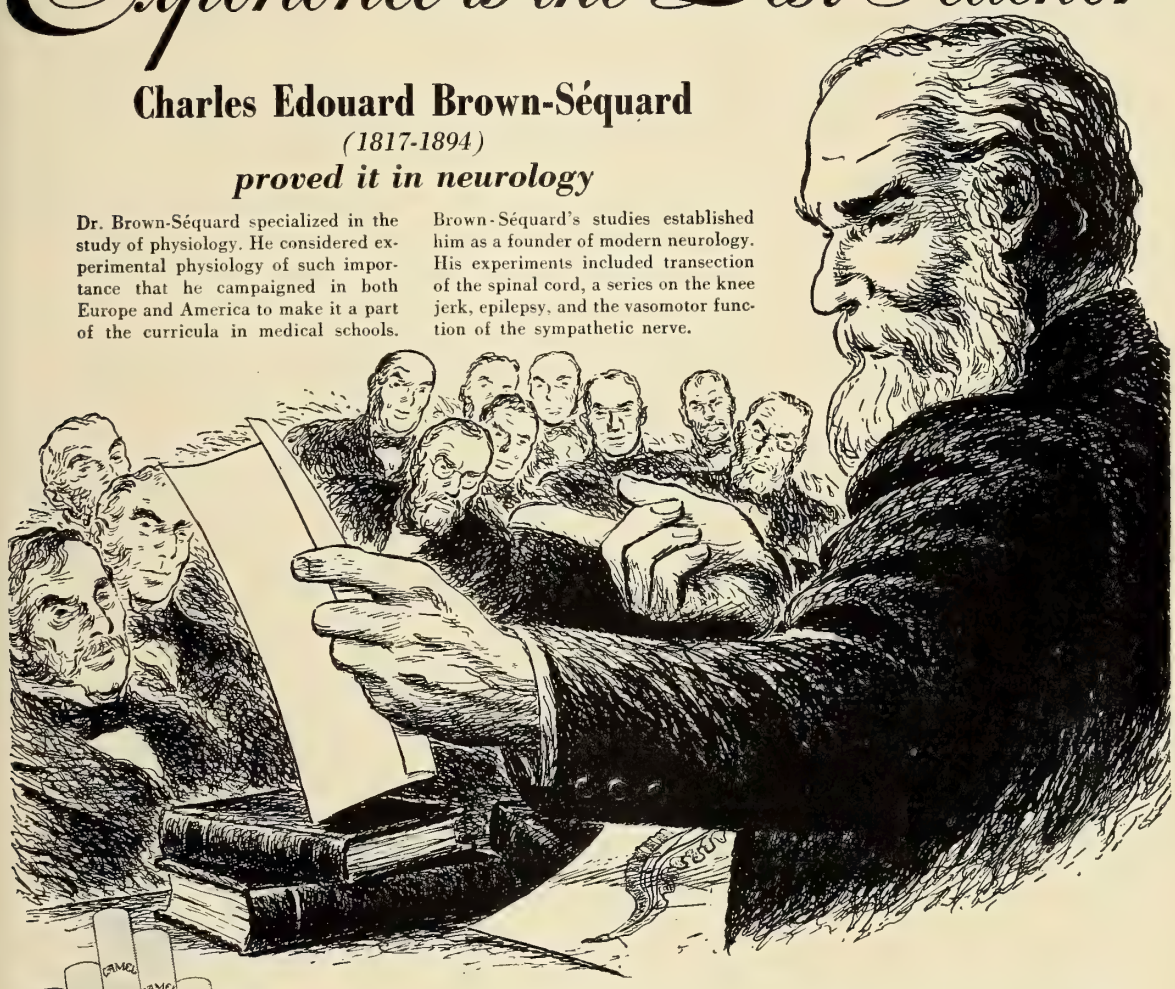
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[1] Forbes, E. B., and Swift, R. W.: J. Nutrition *27*:453 (June) 1944. [2] Forbes, E. B.; Swift, R. W.; Elliott, R. F., and James, W. H.: J. Nutrition *31*:203;213 (Feb.) 1946.

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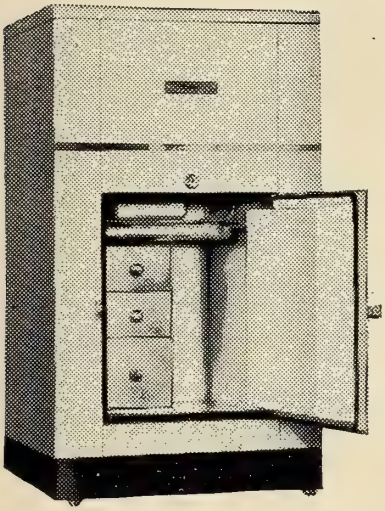
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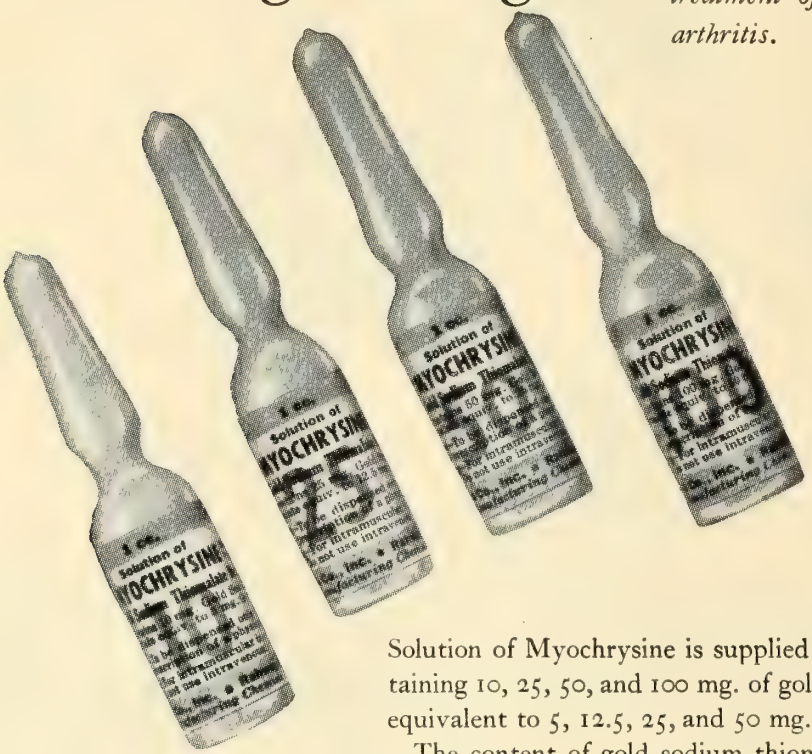
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References: 1. Dodd, K. and Minot, A. S.: *J. Pediat.*, 8:442, 1936.
2. Dodd, K. and Minot, A. S.: *J. Pediat.*, 8:452, 1936.
3. Sahyun, M.: *Am. J. Dig. Dis.*, 13:59, 1946.

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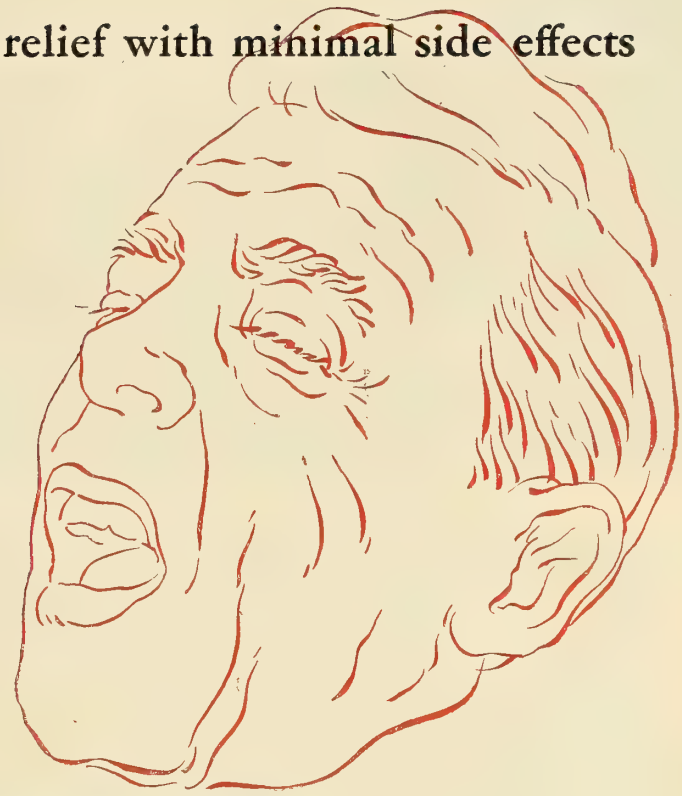
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1. Arbesman, C. E.: *N. Y. State Jl. of Med.*, 47: 1775, 1947.
2. Loveless, M. H.: *Am. Jl. of Med.*, 3: 296, 1947.
3. Bernstein, Rose and Feinberg: *Ill. Med. Jl.*, 92: 2, 1947.
4. Osborne, Jordon and Rausch: *Arch. of Derm. & Syph.*, 55: 318, 1947.

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*Snyder, M. L., Kiehn, C. L. and Christopherson, J. W.: Mil. Surgeon, *97*: 380, 1945. • Shipley, E. R. and Dodd, M. C.: Surg., Gynec. & Obst., *84*: 366, 1947 • Mays, J. L.: J. Med. Assoc. Georgia, *36*: 263, 1947. • Curtis, L.: Surg. Clin. N. America, 1466 (Dec.) 1947.

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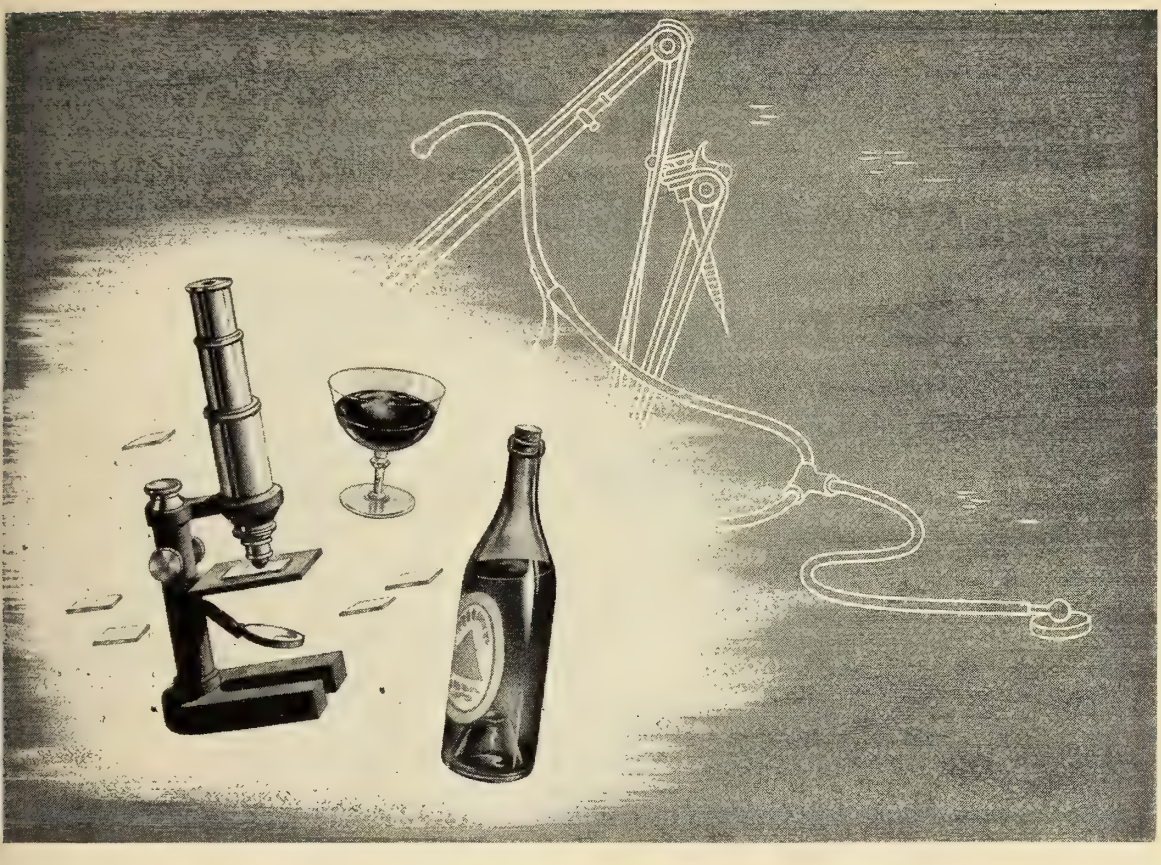
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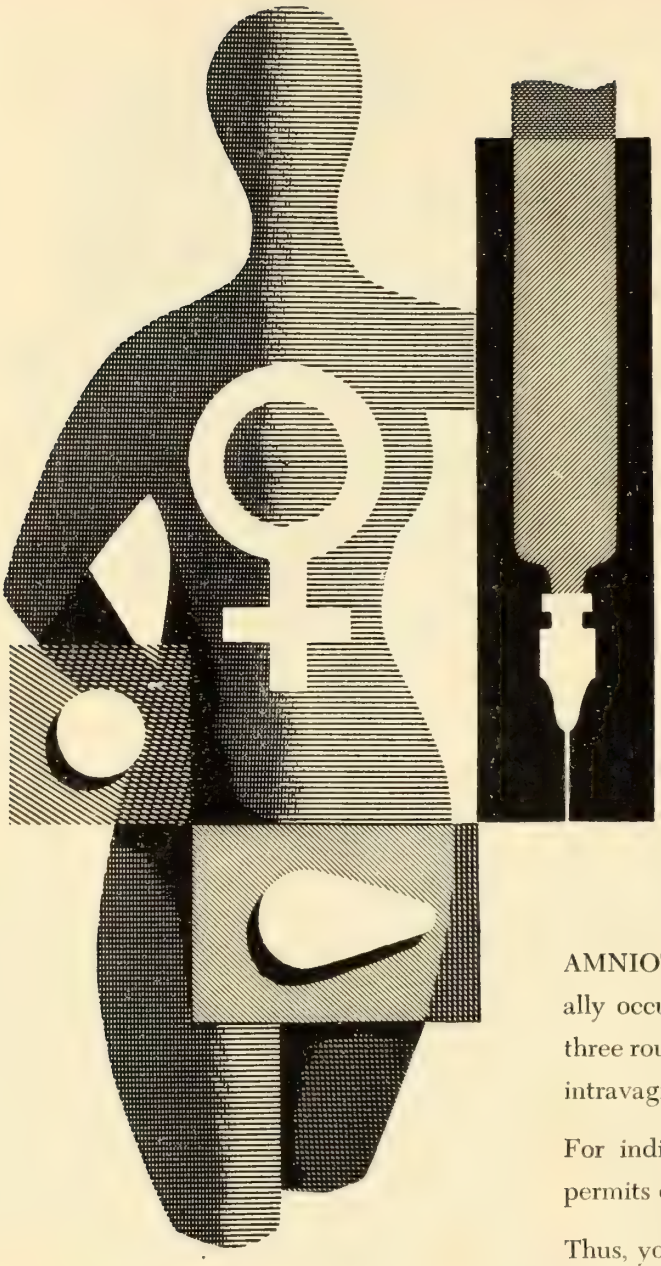
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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 September, 1948 No. 9

NATIONAL HEALTH LEGISLATION

SENATOR JOSEPH H. BALL
Saint Paul, Minnesota

FOR the sake of clarity and brevity, I have divided my subject into three parts:

1. What the federal government is now doing in the health field.
2. Pending legislation proposing additional federal activities and its prospects for enactment.
3. My own views as to the development of a sound federal health program.

What the Federal Government Is Now Doing in the Health Field

As most of you here know, activities of the federal government in the field of health have increased tremendously in the past few years. As a member of the Appropriations Subcommittee which handles the Federal Security Agency appropriation bill, I have watched that growth during the past four years.

The appropriation bill for the fiscal year beginning July 1, 1948, and ending June 30, 1949, is still in conference between the House and Senate, but only a few minor items in the health program are in controversy, so we know substantially what the federal program in this field is for the fiscal year of 1949. That program, including the grants to assist hospital construction, totals $184,380,000. Of that total more than $133,000,000 is for grants to states and local communities and research centers at universities and hospitals, while the federal government will spend directly a little over $51,000,000.

The appropriation for research and treatment of venereal diseases totals $17,230,000, of which $13,323,000 is for grants to state and local communities, some of it for the rapid treatment centers, and another large sum for various state services in this field.

Next year's appropriation in the field of tuberculosis totals $9,291,000, of which $6,790,000 goes in grants to state and local communities and to various research centers. In addition, the federal government spends much of its $2,500,000 for the x-ray projects carried on in some of our larger cities.

The bill carries an appropriation of $14,865,000 for general assistance to states, $12,565,000 of which is for direct grants and the remainder for consultative services. The grants to states under this program go largely to bolster up various public health programs.

The Public Health Service will spend $7,490,000 next year for direct work on communicable diseases, most of it spent in co-operation with the states and local communities on various projects such as the malaria eradication projects in some of the southern states.

The appropriation next year for the National Cancer Institute is $14,000,000, of which $4,150,000 is for research grants to various hospitals and research institutions. In addition the bill carries $8,000,000 of contract authority for grants to research centers for construction of new research facilities for the study of cancer.

For the National Mental Health Institute, next year's appropriation is $10,278,000, of which $8,372,000 again is for research and training grants to state and local communities and research centers, and nearly $4,000,000 for grants to states.

Under the Hill-Burton Hospital Construction

Read before the Public Health Meeting, Minnesota State Medical Association, Minneapolis, Minn., June 9, 1948, by Dr. Reuben F. Erickson, in the absence of Senator Ball.

Act, which provides for $75,000,000 a year of federal assistance in building hospitals over the next five years, the cash appropriation for the next year is $60,000,000 plus $13,000,000 which will be carried over from this year's budget, with an additional contract authorization of $65,000,000.

The 1949 bill also includes $5,000,000 in cash and $25,000,000 of contract authorization for construction of a clinical center and research hospital at Bethesda, Maryland. This project, which is planned for completion by July 1, 1951, is expected to provide adequate laboratory space and also hospital research facilities for clinical research on cancer, heart disease and mental diseases. It is a tremendous program and when completed will cost the federal government between 10 and 15 million dollars a year to operate.

I have not included in these figures the same $25,000,000 which the Public Health Service spends annually in operating marine hospitals and the foreign quarantine service, because these are not the sort of public health programs that we are talking about here today.

However, these totals, while they may seem relatively small in comparison to the billions that we are appropriating for national defense and foreign assistance, nevertheless constitute a very large federal health program. It is a program that is being expanded, particularly in the field of research, as rapidly as trained research personnel are available to carry on an expanded program. I think it is an especially sound program in that the bulk of the federal funds expended on research and public health projects by the federal government are not spent directly, but are grants to state and local communities and to research institutions scattered throughout the country. I am convinced that such a decentralization leads to a much sounder and more effective program than to have the federal government undertake this work directly.

There have been a number of proposals in recent years for the federal government to appropriate huge sums, tens or even hundreds of millions of dollars to mobilize the scientific world for a blitzkrieg attack, so to speak, on some particular disease. This has been particularly true of cancer. The Congress, wisely, I believe, has resisted the pressure for such haphazard and unco-ordinated attacks on the health problems of the nation. The fact is that there are not available either the research facilities or the trained research personnel to undertake that kind of a program, even if it were sound to do so. Instead of that, working largely through the appropriation committee, we have expanded the research programs in all major fields just about as rapidly as the funds could be economically and efficiently spent.

The Hill-Burton Hospital Construction Act, although it was passed more than two years ago, is just beginning to get into operation. The testimony before the appropriations committee indicated that only about $2,000,000 will actually be expended in federal grants during this fiscal year out of $15,000,000 appropriated.

I think the slowness of the hospital program to get under way was due in part to the complexity of the federal regulations in the beginning, plus the fact that all the states were required to develop their own plans before any individual projects could be approved. It is only in the past six months that most of the states have qualified for aid under the program and projects are now being approved in increasing numbers.

Although the tremendously increased costs of construction undoubtedly will cut down the volume of hospital construction under the act, and may necessitate a further extension of the law and some increase in the totals authorized, it nevertheless should contribute very substantially to closing the gap between the need for hospital beds and the facilities now available. Particularly it should assist many smaller rural communities which lack first-class hospital facilities today to build adequate facilities over the next five years.

Pending Legislation Proposing Additional Federal Activities and Its Prospects for Enactment

Coming now to pending legislation in the health field, we confront a rather involved picture. In all, there are eighteen bills dealing with health in the Senate Committee on Labor and Public Welfare, and about an equal number in the House Committee on Education and Labor.

The two bills about which most has been heard are S.545 and S.1320, both dealing with medical care to individuals. S.1320, which you may know as the Wagner-Murray-Dingell bill, proposes a comprehensive, compulsory system of federal medical care insurance under which all employed and self-employed persons would be taxed to create a central health fund. The federal government would operate the entire system and, despite the

disclaimers, the bill if it became law would socialize the practice of medicine in the United States.

S.545, introduced by Senator Taft and several others including myself, on the other hand, is essentially a grant-in-aid bill to assist states and local communities in providing medical and dental care to individuals who are unable to pay the whole cost of such care themselves. The bill is based on the philosophy that all individuals other than the indigent should make their own provisions for medical care. It further would encourage state initiative and experimentation in solving the problems of medical care for the indigent through the development of voluntary prepayment insurance plans such as the Blue Cross and Blue Shield.

Most of the other pending bills either provide for additional federal funds for research in some particular field or for the training of scientific and research personnel or for grants to states for some particular activity. Many of them duplicate provisions of either S.545 or S.1320.

One of them, S.2215, sets up a national heart institute similar to the national cancer institute. That bill has been reported out by the committee and passed by the Senate. It does not actually provide for any activity which the Public Health Service is not carrying on at present under language in its appropriation bills, but it does put research in heart disease on a par with research into cancer and mental diseases.

The committee has also approved, the Senate has passed, and the House probably will pass, the National Science Foundation bill which provides for research and training in all the sciences including medicine.

Outside of those two measures, the National Science Foundation bill and the National Heart Institute bill, both of which are expected to be enacted at this session, it does not appear likely that any other important legislation in this field will be passed this year.

Hearings on the two major bills, S.545 and S.1320, although they have been held intermittently for many months and fill several volumes of printed records, are still incomplete. And in any event, S.1320, the compulsory health insurance bill, does not stand a chance of passage by this Congress.

The whole trend in Congress in the past three years has been away from further experiments in socialization rather than toward them. Furthermore, the report of the Brookings Institution on the whole question of medical care for the individual, made for the Senate Health Subcommittee, has dampened very considerably any enthusiasm that did exist in Congress for rushing into some kind of federal program to provide medical care for individuals.

The Brookings Institution report emphasized very strongly the dangers in that course of action and exploded rather completely the myth so extensively propagandized in recent years that the United States is a nation of weak, unhealthy cripples, ridden by disease and completely lacking in adequate medical care. To anyone who has observed the health of peoples in other countries, including those which have experimented with socialized medicine, it was always apparent that the phony statistics and half-truths of which the propaganda for the Wagner-Murray-Dingell bill was built did not present a true picture of this nation's health position, but it was very helpful to have an impartial research agency like the Brookings Institution confirm that fact.

The Brookings Institution goes further and points out that the progress in health, in longevity and in the control of epidemics in the United States, with its free and voluntary medical system, has been extremely rapid and that wrecking that voluntary system by a compulsory health insurance program probably would mean retrogression rather than progress.

My Own Views as to the Development of a Sound Federal Health Program

And now, finally, where should we go from here in developing a sound federal health program?

Permit me to list briefly, in order of the priority I would assign to them, the measures which I believe the federal government should undertake in this field.

First, let me say that I am convinced that in the tremendous emphasis on medical care for the individual in the past few years, we have tended to lose sight of what should be the major concern of government in the health field, which is a positive rather than a negative approach to health. In other words, instead of developing huge programs to provide medical care for individuals who have contracted disease, we should concentrate on public, private and co-operative programs to build the health of our people in positive terms, to prevent disease rather than cure it after it has oc-

curred. That is a long-established and legitimate field for governmental activity and one which still needs strengthening.

Furthermore, with full employment today and a national income of more than 200 billion dollars, there are relatively few families who cannot afford adequate medical care if they want to give that care the priority it should have in over-all expenditures for the family.

So, in order of priority, here are the things I think Congress should do in the next few years in this field of public health:

First, Congress should try to achieve some co-ordination between the tremendous veterans program in this field and that of the Public Health Service. There is no co-ordination today, and yet the Veterans Administration is spending hundreds of millions of dollars on medical care and potentially may have the major obligation for hospital treatment at least for anywhere from five to ten million veterans within a few years.

In the field of hospital construction, for instance, the Hill-Burton bill provides for a $750,000,000 construction program over five years. The Veterans Administration already has blueprints for a billion-dollar hospital construction program over the next five or ten years. Inevitably, with such a large percentage of our population today being veterans, the construction program for the Veterans Administration will affect tremendously the need for other private and public hospitals in any particular area. And yet today there is no direct co-ordination between the Veterans Administration hospital program and the building programs being developed by the states under the Hill-Burton Act. We have talked a great deal about centralizing health services in one federal agency, but it seems to me that without some real co-ordination between the Veterans Administration and the Public Health Service such centralization will not accomplish much.

Second, the federal government should continue to expand its research and training program, chiefly through the method of grants to state and local communities and research institutions, which will assure decentralization of the activities and prevent the building up of a huge bureaucracy which would stultify rather than strengthen research.

Third, Congress should provide for federal grants to extend standard public health services to those localities and communities which are not financially able to carry the whole burden themselves. A bill, S.2189, introduced late this session, proposed such a program. It is probably too late for proper study before action at this session, but it should be high on the agenda for the next session of Congress.

Fourth, Congress should act on proposals which have been pending for several sessions to provide federal assistance for sewage disposal plants to clean up the pollution which has ruined so many of our fine rivers, and also to strengthen industrial hygiene programs in various states. Again such programs should be carried out through grants to the states providing for decentralized administration.

Fifth, the federal government, when funds are available within a balanced budget, should assist the states in developing and strengthening a program of health education in the public schools, possibly coupled with annual examinations of school children in order that diseases may be diagnosed early enough for effective treatment.

Sixth, as federal funds are available, Congress might provide federal assistance to states to assist in improving medical care for indigent people. Such a program should allow the states wide latitude to adopt their own plans for such care and should encourage the development of such voluntary prepayment plans as the Blue Cross and the Blue Shield systems.

In conclusion, I believe it is much wiser and sounder, in the long run, for us to go a little more slowly in expanding present federal programs and in inaugurating new ones, rather than enthusiastically rushing to spend millions every time some new panacea for the nation's health problems is proposed. If I have learned one thing in eight years in the Senate, it is that quick panaceas for serious and complicated problems are almost inevitably a snare and a delusion. They tend almost always to concentrate ever greater power in the central government, a tendency which carries grave dangers for individual freedom.

And even though some enthusiasts, looking only at the problems in the particular field, may overlook it, there are limits to the resources of the federal government. It can spend only the money it collects from you and me in taxes, and taxes can become so high that they destroy the

(Continued on Page 1015)

TEAMWORK IN THE CONSERVATION OF HUMAN RESOURCES

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LESS than fifty years have passed since the time when medicine was practiced almost wholly by general practitioners with a few specialists, all of whom were concerned primarily with the diagnosis and treatment of disease. Hardly one hundred years have passed since the profession of public health was joined to the professions that render maximum service to mankind.

Today in the United States, where we have reached the highest standard of medical care and perhaps also of preventive medicine that prevails in any great nation in the world, the physician, the public health worker, the social worker, the hospital administrator, the technicians in the field of clinical pathology, sanitary engineering and entomology, the nurses, the dietitians, the record librarians and many others work together in the development of a pattern of medical care suitable to the American way of life. The care of the sick in the United States today is a full-time job not only for the 180,000 physicians who are licensed to practice and who are active in the field but for at least 2,500,000 to 3,000,000 additional people who are concerned with the prevention of disease and the care of the sick. The result of this magnificent teamwork has been the great change in the picture of the medical problem in the United States in the last fifty years.

The contrast with other nations in which similar progress has not been made is striking. In 1900 in the United States tuberculosis was captain of the men of death; today tuberculosis is sixth or seventh in the list of causes of death. The improvement has been brought about by teamwork. Before the team could apply its methods, scientific research had to make available exact knowledge on which action could be based. The determination of the cause of tuberculosis and its method of spread enabled studies of the sputum for the presence of the germ and led to the establishment of sanatoriums in which those who spread the disease could be isolated away from their families. Then came the establishment of some 800 sanatoriums in the United States where the tuberculous are given modern methods of treatment. Subsequently came the development of artificial pneumothorax as a means of putting at rest the diseased lung. Thereafter came the use of the x-ray to detect the lesions in their earliest stages and the use of the tuberculin test for the detection of those susceptible to the disease. Thereafter came the establishment of methods of hygiene and of preventoriums for encouraging the resistance and the safety of little children. In this work the National Tuberculosis Association with its tremendous educational campaigns, financed by the Christmas Seal sale, played a leading role. And now we are in the era of chemotherapy with the use of streptomycin and various derivatives of the sulfonamide drugs as well as the BCG vaccine, with the likelihood, for the first time, that tuberculosis may be made as rare as typhoid fever in the United States in another two generations. The death rates from tuberculosis in the United States have dropped from 270 per 100,000 population to rates below 30 in Minnesota, which is among the leaders in the nation in this work. Elsewhere in the world, there are still death rates from tuberculosis of 250 to 450 per 100,000 population.

Consider how the team has functioned in this attack. Here are the combined efforts of philanthropic associations led by social workers and medical statesmen. Here are the activities of the health authorities—national, state and local—integrated into the national scheme. Here is the work of the individual physician who detects the disease in the patient and cares for him whether that care is rendered in the home, the hospital or the sanatorium. Here are applied the activities of all of the technicians already mentioned and, in addition, the physical therapists, the occupational therapists, the psychologic-social workers and the specialists in rehabilitation.

I have taken the fight against tuberculosis carried on by these organizations as a conspicuous example of medical teamwork for the conservation of human resources, but I could equally well refer to other agencies which are a part of our American scheme. Outstanding has been the contribution of the National Foundation for Infantile Paralysis, the American Heart Association, the

*Abstract of a paper presented at the Public Health Meeting, June 9, 1948, held in Minneapolis in connection with the 95th Annual Meeting of the Minnesota State Medical Associaton.

American Cancer Society, the National Society for Crippled Children and Adults, and special organizations devoted to the blind, to the hard of hearing, to those with multiple sclerosis, epilepsy and similar diseases. These represent the complete co-operation of the medical profession, the great philanthropists, the administrators and social workers organized to function together first in the raising of funds, second in the encouragement of research, third in the care of those who would not receive adequate care otherwise, and fourth in education of the public. These are the chief functions which these great organizations have carried on so magnificently.

The outstanding feature of American medicine is its continuation in the field of what is commonly called private enterprise. But it is the pride of the private enterprise of American medicine that it co-operates with every agency concerned equally in maintaining a high quality of medical care and the highest possible standards in the prevention and control of disease. Let us consider the evolution of our present American system of medical care. Again the service of the family doctor of an earlier day has evolved into a variety of services rendered under a variety of conditions. The general practitioner is still today the functioning unit in most medical care. Upon him devolves the duty of medical counselor for the family—the first to detect disease and the first to give proper care for the vast majority of conditions for which patients consult doctors. He also, however, must determine whether or not the patient requires the services of a hospital or a diagnostic institute. He must decide whether or not he wishes the consultative services of groups of specialists individually or in organized agencies.

In the growth of our hospitals we have a magnificent example of community effort exercised through agencies of the church, of trade organizations and of whole communities. Into this picture comes the government aid manifested by the Hill-Burton Act with the understanding always, however, that the hospital is the health center of a local community upon which must rest the responsibility for its administration and its maintenance. In the hospital the administrative board, the medical staff, the superintendent and a great variety of highly trained technical employes work as a team for the good of the individual patient. Behind the care of every sick patient are dozens of highly trained persons concerned with giving to each of the sick the best that modern medicine can give. In the operating room, in the delivery room, in the diagnostic clinic, always one sees, under the leadership of the physician who assumes the prime responsibility for the rendering of service, the specialist, nurses, interns, assistant residents and residents who are improving in their training, the anesthetist, the roentgenologist, the clinical pathologist and all of the other associates again focusing on the care of one patient the most that modern medicine can provide toward his recovery.

From the economic point of view again the problem of medical care is being worked out on the basis of the voluntary team. Here come the agencies of the type of Blue Cross insurance against the costs of hospitalization, non-profit and private insurance against the costs of sickness, surgery, obstetrics and medical catastrophies. Here through such insurance agencies and through co-operatives and group practice and similar voluntary methods all unite for the good of all and the physician co-operates in order that the quality of the service rendered may be adequate and not conditioned at the low level of economic schemes in which administration rather than scientific knowledge determines the quality of the service rendered.

In every phase of medical care in our nation today there is teamwork. It is a teamwork that has grown out of needs of man but principally out of the advancement of medical science and a recognition of the necessity for co-operation, co-ordination and integration for maximum achievement.

EPITHELIOMAS OF THE LOWER LIP

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THE lips are a rather common site for the development of carcinoma. Of all the malignant tumors of the entire body treated at the Mayo Clinic during 1945, 2.3 per cent involved the lips. Carcinoma in this location is definitely a disease of men. At the clinic only a trifle more than 1 per cent of the patients who have this disease are women. More peculiar, however, is the fact that about 98 per cent of these lesions are on the lower lip only.

Malignant tumors which affect the vermilion portion of the lips are for the most part squamous-cell epitheliomas. Practically all such lesions in this location arise primarily in the mucous membrane, although the vermilion border occasionally is invaded secondarily by a squamous-cell or basal-cell epithelioma which starts in the adjacent skin. In size, great variation can be expected in epitheliomas of the lips; this depends on the duration of the growth and its degree of activity. If left untreated, epitheliomas of the lip spread and involve the entire lip. Those on the lower lip may infiltrate the tissues of the cheek or chin, become attached to the periosteum of the underlying bone or actually invade the substance of the mandible itself. These neoplasms may appear to be well circumscribed, elevated and usually ulcerated lesions with indurated margins; some are deeply ulcerated and inflamed, whereas others are large fungating masses. Clinically, little difficulty is encountered in the diagnosis of epitheliomas on the lips, although some of them, particularly the more active types, cannot always be distinguished from inflammatory, tuberculous or syphilitic ulcerations. Because mere visual inspection of growths on the lips does not always lead to a definite diagnosis, at the clinic we are decidedly of the opinion that when an ulcerated lesion does not heal in three or four weeks, a specimen should be removed and examined histologically without further delay. Such a policy leads to the diagnosis and early treatment of many malignant tumors which otherwise would be neglected until they have reached a more advanced stage.

All carcinomas at the clinic are examined microscopically and the degree of malignancy is graded from 1 to 4 (Broders' classification). On study of the grade of malignancy of a large series of cases of primary and untreated epithelioma of the lower lip at the clinic, it was found that in approximately 39 per cent of cases the epitheliomas were of Grade 1 malignancy, in about 52 per cent of Grade 2, in 8.5 per cent of Grade 3, and in 0.5 per cent of Grade 4. Since it is generally accepted that malignant neoplasms of the low grade of malignancy are radioresistant it is extremely important that the grade of activity of all epitheliomas on the lips be determined, particularly when the treatment of the regional lymph nodes is under consideration.

Treatment

The removal of precancerous lesions which are nonmalignant but which are likely to lead to the development of an actual carcinoma will contribute greatly to the control of malignant lesions of the lips. Consequently, my colleagues and I recommend that all lips afflicted with thickened patches of leukoplakia, keratoses, chronic scaling, persistent inflammatory ulcers or recurring fissures receive treatment. Surgical removal of the lesion, rather than irradiation, is the treatment of choice.

The exposed part of the mucous membrane of the lip is completely excised under local anesthesia, and the mucous membrane at the edge of the wound is undermined and sutured anteriorly to the edge of the skin with interrupted fine silk sutures. Because the suture line is located along the mucocutaneous border, scarring becomes almost invisible within a period of two or three months.

The mucous membrane with the lesion removed in this fashion always is examined under the microscope. It is surprising how often evidence of the early malignant change is found, that is, how often the lesion proves to be a Grade 1 squamous-cell epithelioma *in situ*.

Many patients who have frank epitheliomas on the lower lip also may have thickened patches of leukoplakia or keratoses elsewhere on the lip. In these cases, excision of the malignant lesion can

From the Section on Laryngology, Oral and Plastic Surgery, Mayo Clinic, Rochester, Minnesota.
Read at the annual meeting of the American Society of Maxillofacial Surgeons, Minneapolis, Minnesota, October 28, 1947.

be combined with removal of the exposed mucous membrane as just described. Such treatment not only removes the epithelioma but also prevents the development of other epitheliomas on the lip.

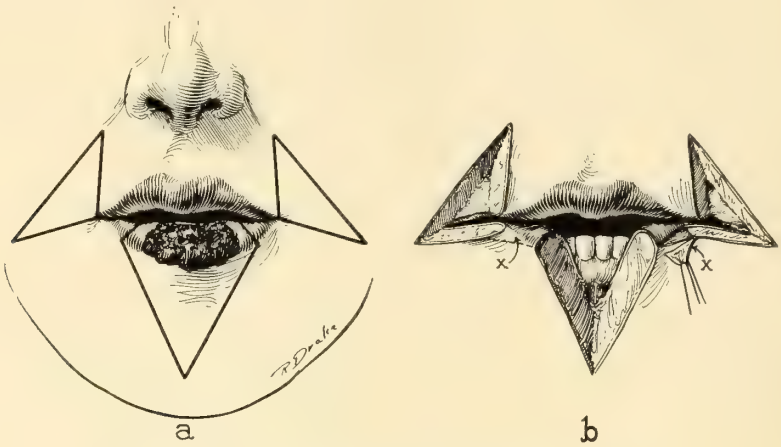


Fig. 1. Large epithelioma of lower lip. Tissue to be removed is outlined in *a*. Lateral incisions into cheeks permit advancement of tissues of cheek to median line to form a new lower lip. However, these lateral incisions also increase width of upper lip, which must be reduced to normal size by removal of triangular portions of skin and subcutaneous tissue at angle of mouth, as in *b*.

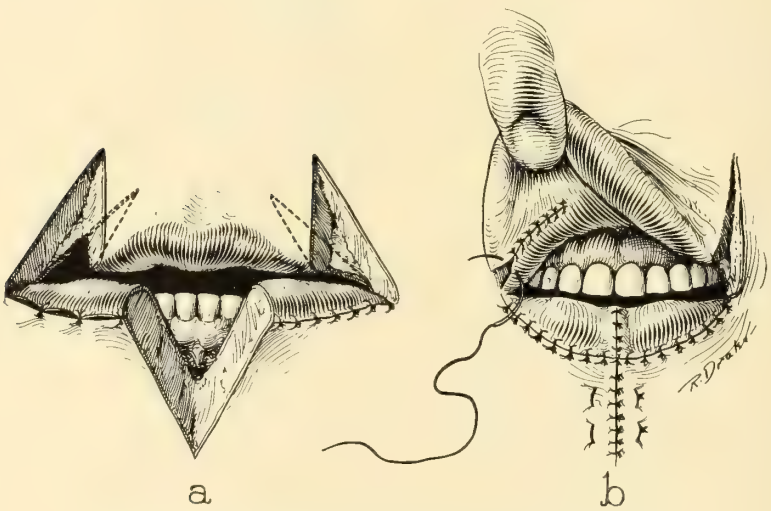


Fig. 2. V-shaped defect, *a*, of lower lip is sutured together in median line *b*. Mucosal and cutaneous edges of lateral incisions are sutured together, *a* and *b*, to form vermilion border for new lower lip. The dotted triangular areas of mucous membrane on either side of upper lip in *a*, when excised and sutured, tend to produce a more normal contour of new angles of the mouth.

In removal of epitheliomas which do not involve more than a third of the lower lip a V-shaped incision is used. After excision of the lesion the margins of the tissue are sutured together. The subcutaneous tissues, muscle and mucous membrane are approximated with catgut sutures and the edges of the skin with interrupted fine silk stitches. When properly executed, this operation leaves an excellent cosmetic result, since the small amount of tissue removed does not change appreciably the width of the oral fissure.

After V-shaped excision of more than a third of the lower lip for large epitheliomas, more extensive plastic correction is required (Figs. 1 and 2). Although the margins of the large V-shaped defect are sutured together as just described, a greatly narrowed oral aperture results,

the width of which must be increased by a plastic operation on the upper lip and cheek at both angles of the mouth. Actually, lateral incisions from the angles of the mouth out into the cheeks permit advancement of the tissues of the cheeks to the median line. This is necessary for establishing the normal width of the lower lip. However, the lateral incisions required in the reconstruction of the lower lip also may increase the width of the upper lip (Fig. 1*b*). This necessitates a reduction of the upper lip to its normal horizontal dimensions by removing a triangular portion of tissue at each angle of the mouth. The end result of this plastic procedure is most satisfactory, both from a cosmetic and a functional standpoint, even in cases in which practically the entire lower lip has been removed. Some surgeons prefer not to reject the triangular pieces of cheek tissue at each angle of the mouth, but to cut them as pedicle flaps and to turn them down for reconstruction of the lower lip; however, my colleagues and I believe that better results are obtained when these triangular pieces of tissue are discarded.

When a large epithelioma is confined to one side of the lip, a satisfactory reconstruction of the lip can be accomplished often by a plastic operation at only one angle of the mouth, that on the same side as the lesion.

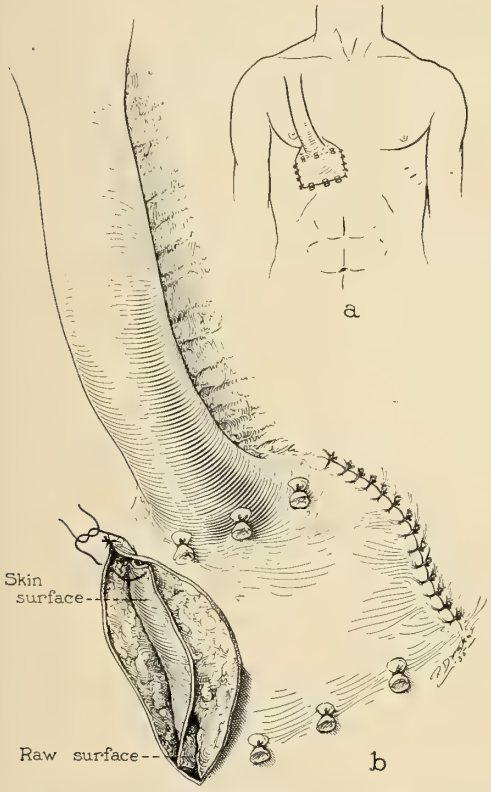


Fig. 3. Method of reconstructing the entire lower lip by means of a tube flap from the chest; position of tube on anterior portion of thorax, and lower end of flap, which is lined with a full-thickness skin graft, are shown.

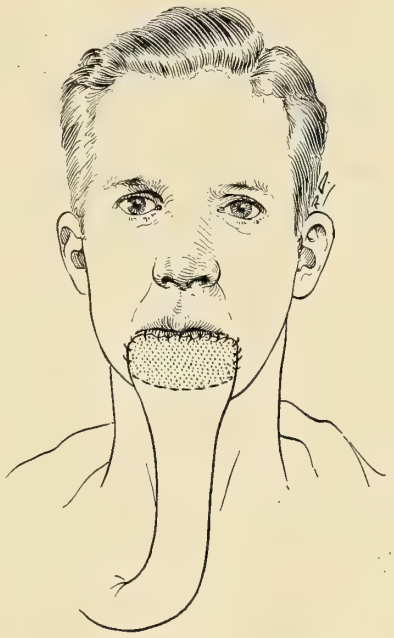


Fig. 4. The lower end of the tube flap on chest is elevated and sutured in position to form the new lower lip. The shaded portion indicates the lining formed by the full-thickness skin graft.

Whenever an epithelioma of the lower lip invades the tissues of the cheek, its removal cannot be followed immediately by plastic closure. Furthermore, if a large epithelioma of the lower lip has become attached to the periosteum of the mandible or has actually invaded the bone, it should be removed by surgical diathermy (electrocoagulation). The entire growth is excised by the cutting cautery, while the underlying periosteum and bone to which the growth is attached are thoroughly electrocoagulated. This form of treatment results in a sequestrum of bone which gradually separates and which can be removed in two or three months. A radical procedure of this type, we believe, is necessary to cure the malignant lesion, but it unavoidably produces a conspicuous facial defect. Reconstruction of the lower lip and chin can be carried out eventually after it is fairly certain that malignant growth will not recur. This means a delay of twelve months after operation.

For complete loss of the lower lip, plastic reconstruction is necessary. Sufficient tissue can be procured advantageously through the use of a tube flap from the chest, which will supply an abundance of skin for the restoration (Figs. 3 and 4). When a tube from the chest is used for such a purpose, the flap must be made relatively long from end to end and large in diameter. Consequently, much time is required for the establishment of proper blood supply in such a tube. After the primary operation in which the flap is elevated from the chest and tubed, it is best to wait about three months before its lower extremity is raised. Either end of such a tube flap may be employed to form the new lower lip. Since the color of the skin in the clavicular or infraclavicular regions resembles more closely that of the face than does the skin over the lower part of the chest or abdomen, the upper end of the tube flap from the chest is best from the cosmetic point of view. However, its use incurs one disadvantage, namely, that of extending the time necessary to complete the plastic procedure, because the lower termination of the tube first must be transferred to the neck before the upper part can be elevated to the face.

The portion which is to form the lip must be lined with skin. This can be accomplished by folding the end of the tube, or better, by the use of a full-thickness skin graft (Fig. 3). A vermilion border to the lip may be constructed by sliding flaps of mucous membrane from the cheeks across the upper free margin of the graft.

At the clinic, the use of radon seeds, radium plaques or external irradiation for the local primary lesion is confined generally to large epitheliomas of Grade 4 of the lips, to carcinomas of elderly individuals or to malignant lesions on the lips of patients for whom the surgical risks are extremely great.

Since metastasis to the regional lymph nodes is likely to occur, the therapeutic management of patients who have carcinoma of the lips should include not only removal of the primary lesion but treatment of the nodes in the neck as well. My colleagues and I believe that the most effective method of preventing cervical metastasis is to block off the lymph channels by surgical removal of the cervical nodes. Because the submental and submaxillary nodes are most likely to become involved, we recommend that every dissection of cervical nodes include first dissection of submental and submaxillary nodes and also the nodes near the upper part of the jugular vein. If, on microscopic examination by the frozen section method, one or more of these nodes is found to be involved by a metastatic lesion, an immediate block dissection of the deep cervical lymph nodes is carried out on the involved side. I would like to repeat that at the clinic bilateral dissection of the submental and submaxillary nodes and the nodes along the upper part of the jugular vein is carried out as routine procedure whenever any cervical nodes are removed. A block dissection of the deep nodes is resorted to only when one or more nodes in the submental, submaxillary or upper part of the jugular regions are found to be involved. When block dissection of the deep nodes is undertaken, removal of the sternocleidomastoid muscle is advocated only when lesions of a high grade of malignancy or extensive cervical involvement by the malignant process is present.

Dissection of the cervical nodes for carcinoma of the lips then is carried out as a prophylactic measure to prevent metastasis as well as a curative form of therapy to remove cervical nodes already involved by the malignant process. Just which patients should be treated by dissection of the cervical nodes is determined by many factors. At the clinic the decision rests largely on the grade of malignancy of the primary lesion. We have found that squamous-cell epithelioma of Grade 1 practically never produces metastasis to the cervical nodes unless the lesions are badly infected or inflamed. Consequently, patients who have epithelioma, Grade 1, without any evidence of cervical extension are not subjected to dissection of the cervical nodes. However, as previously stated, an inflammatory reaction due to infection or caustic agents can augment the activity of an epithelioma; if a primary lesion of Grade 1 on the lip is badly inflamed, it then may be justifiable to consider removal of the regional lymphatics.

Squamous-cell epitheliomas of Grade 2 or 3, on the lips, are so likely to produce cervical metastasis that dissection of these nodes in the neck is a routine procedure at the clinic in all such cases. Irrespective of the size of a primary lesion of Grade 2 or 3, dissection of the cervical nodes is to be recommended, and the most satis-

(Continued on Page 999)

A SURVEY OF CESAREAN SECTION IN MINNEAPOLIS, MINNESOTA, IN 1946

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CESAREAN section, according to recent surveys in this country, has shown some increase in incidence. More noteworthy, however, is the marked decrease in maternal and fetal mortality. In order to compare the results in this community with those in other localities, a survey of the cesarean sections performed in Minneapolis in the year of 1946 was undertaken. For comparison, only one survey made in the immediate vicinity could be found. This was a five-year study of cesarean sections in Ramsey County, Saint Paul, Minnesota, by Skinner, in which observations were made of the years from 1937 through 1942. During this period, 28,868 hospital deliveries were recorded with 434 cesarean sections, an incidence of 1.5 per cent, which varied from an incidence of 0.5 to 2.8 per cent in the different hospitals in Ramsey County. There were eight maternal mortalities, an incidence of 1.84 per cent, and the fetal mortality of 11.2 per cent.

Minneapolis has a population of approximately 500,000. During the year 1946, 15,582 live births were recorded by the City Board of Health, a rate of 30.8 per 1,000 population; 436 infant deaths and thirteen maternal deaths were recorded, resulting in rates of 27.8 and .8 per 1,000 population, respectively (Table I).

TABLE I. MINNEAPOLIS HEALTH DEPARTMENT RECORDS, 1946

Total recorded live births	15,682
Rate per 1,000 population	30.8
Total recorded infant deaths	436
Rate per 1,000 live births	27.8
Total recorded maternal deaths	13
Rate per 1,000 live births	0.8

Of the thirteen maternal mortalities, four resulted from abortions and one from early ectopic pregnancy, leaving eight obstetrical maternal deaths.

Three hundred and three stillbirths were recorded, making the total recorded births in the city 15,985. The total number of deliveries reported by the hospitals of Minneapolis in the same year was 15,556. The number of multiple births and the precise number of stillbirths occurring in the hospitals was not examined, but, assuming the usual incidence of multiple births, the incidence of hospital deliveries is probably about 99+ per cent.

Minneapois has ten voluntary hospitals in which the obstetrical departments are utilized exclusively for private patients; the Minneapolis General Hospital, where obstetrics is solely a service for the indigent of the city; the University Hospitals in which the obstetrical facilities are employed largely for the obstetrical abnormalities of the semi-indigent and indigent of the state; and the Maternity Hospital, an exclusively obstetrical hospital, in which the service is approximately 60 per cent private patients, 30 per cent Community Health (partial pay) patients, and 10 per cent unmarried mothers.

Of the 15,556 recorded deliveries in the hospitals of Minneapolis in 1946, 405 were by the cesarean section method, an incidence of one in thirty-eight (2.6 per cent). Only two maternal mortalities occurred. The first, attributable to an amniotic fluid embolus, occurred during an operation for complete placenta previa, and the second, in connection with a case of fulminating preeclampsia. In addition, one postmortem cesarean section was performed on a patient whose death occurred from the bulbar type of anterior poliomyelitis a few minutes before. A living baby was delivered, but death occurred shortly after.

TABLE II.

Infant deaths per 1,000 live births (Board of Health)	27.8
Infant deaths (cesarean section)	16.
Infant deaths (cesarean section)	3.9%
Infant deaths (cesarean section) per 1,000 live births	41.1
Infant deaths (causes)	
Abruptio placenta	7.
Erythroblastosis	2.
Prematurity	4.
No reason given	3.
Total	16.

Infant deaths recorded with cesarean section during this period amounted to sixteen, an incidence of 3.9 per cent, or 41.1 per 1,000 live births as compared to an over-all infant death record in the city of 27.8 per 1,000 live births (Table II). An analysis of infant deaths revealed that

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TABLE III. CESAREAN SECTION DURING THE YEARS 1937-1945

Author	Locality	Years	No. C. S.	%	Deaths	%
Keetel	Wisconsin	1937	1021	1.9	35	3.4
		1938	1233	2.2	19	1.5
		1939	1221	2.2	27	2.2
		1940	1439	2.5	32	2.2
Williams	Philadelphia	1937	811	2.7	20	2.5
		1938	795	2.6	13	1.6
		1939	857	2.8	11	1.3
DeNormandie	Mass.	1937	2082	3.2	66	3.1
		1938	2216	3.4	60	2.7
		1939	1984	3.1	54	2.7
		1940	2312	3.4	41	1.7
		1941	2436	3.3	52	2.7
Lee	Portland	1942	223	2.6	1	.45
Bell	Oakland	1943	290	4.0	2	.68
Mack						

seven occurred in connection with abruptio placenta, two were due to erythroblastosis, seven were assumed to be due to prematurity as the babies were delivered prior to the thirty-second week, and in three cases no reason was given.

If the record of cesarean sections in Minneapolis is compared to those reported from other communities in the country in recent years, the trends would seem to be parallel, namely, a slight increase in the incidence of the procedure with a reduction of maternal and fetal mortality (Table III). Further, a comparison to the Ramsey County survey shows the same general improvement in this locality as noted in other communities.

The incidence of cesarean section in the individual hospitals of Minneapolis is presented in Table IV.

Neither the number of deliveries in any hospital nor the status of the attending staff as to general practice or limited obstetrical practice seems to influence the percentage incidence. For instance, hospitals B and G are attended almost exclusively by general practitioners, while hospitals D, F and K are attended almost entirely by obstetric specialists. The high incidence of cesarean in hospital M is to be expected because of the selectivity of the patients.

Of the 405 cesarean sections performed, 240 were of the classical type, while 156 were low cervical in character. Seven cesarean hysterectomies were performed, an incidence of 1.7 per cent. This is considerably lower than reported by Reis and DeCosta in their own series and in most of the other series tabulated by them. However, it compares favorably with DeNormandie's studies of cesarean section in the State of Massachusetts, in which the incidence of the Porro section was 1.3 per cent. Two things are noteworthy in connection with the seven cesarean hysterectomies. First, five were performed in one hospital; and second, in no case was the operation performed because of potential infection. In two cases myomas were present. In three cases the indication was given as previous cesarean section, one complicated by diabetes. One patient was a gravida 9, para 8 woman with a partial placenta previa, and in one case the indication was designated as hyperemesis gravidarium in a gravida 2, para 0 woman, aged thirty-four. In this series, there was only one vaginal cesarean section and one abdominal pregnancy. The morbidity relationship to type of operation is shown in Table V.

TABLE IV

Delivery	Hospitals	C.S	Per cent
2692	A	85	3.2
2627	B	77	2.8
1929	C	64	3.3
1460	D	54	3.7
1413	E	19	1.3
1161	F	7	.6
1028	G	10	1.
809	H	21	2.6
802	I	16	2.
644	J	21	3.2
365	K	4	1.
325	L	5	1.5
301	M	22	7.

TABLE V

Type of Operation	No. Cases	Morbid	Nonmorbid %
Classical	240	67 (28)	173 (72.)
Low Cervical	156	33 (21)	123 (79.)
Cesarean hysterectomy	7	2 (28.5)	5 (71.5)
Vaginal	1		1 (100.)
Abdominal pregnancy	1		1 (100.)

An examination of the qualifications of the individuals performing the operations in this series reveals that of the 405 cases, 250 were executed by qualified obstetricians either individually or in consultation, as compared to 155 done by general practitioners or surgeons. All of the Porro sections, the vaginal cesarean section and the abdominal pregnancy section, were attended by obstetricians. Of the 240 classical cesarean sections, 126 were performed by the general practice group while 114 were executed by the qualified obstetrical group, a ratio of approximately 1 to 1. In contrast, of the 156 low cervical operations, twenty-seven were done by the former and 129 by the latter groups, respectively, a ratio of 1 to 5. The above may indicate reluctance on the part of the general practitioner to undertake the low cervical operation, but it does not account for the

high proportion of classical cesarean sections performed by the qualified obstetricians, in spite of the generally recognized virtues of the low cervical operation.

Poor records permitted only 296 of the 395 cases of classical and low cervical cesarean sections to be studied for morbidity in relationship to the status of length of labor and the condition of the bag of waters. Although the number of cases is too small to draw definite statistical conclusions, the exhibition of the trends may be suggestive, as shown in Tables VI and VII.

TABLE VI

In Labor	No. Cases	Morbid	Non-morbid
Membranes ruptured			
Classical	19	10 (53%)	9 (37%)
Low cervical	11	5 (45%)	6 (55%)
Membranes not ruptured			
Classical	25	11 (44%)	14 (56%)
Low cervical	14	1 (7%)	13 (93%)

TABLE VII

Not in Labor	No. Cases	Morbid	Non-morbid
Membranes ruptured			
Classical	10	5 (50%)	5 (50%)
Low cervical	9	3 (33%)	6 (66%)
Membranes not ruptured			
Classical	118	20 (17%)	88 (83%)
Low cervical	79%	11 (14%)	68 (86%)

Thus, in these comparisons the low cervical operation may seem to have an advantage in all conditions except when the patient is not in labor and has intact membranes.

The indications for cesarean section in this series is revealed in Tables VIII, IX, and X.

TABLE VIII

Multiple	155
Single	250
Obs.	383
Med.	22

TABLE IX

	Per Cent
Disproportion	26
Previous cesarean section	20
Toxemia	12.7
Non-convulsive	(6.3)
Convulsive	(6.4)
Placenta previa or abruptio	11
Abnormal presentation	7
Medical reason (heart, t.b., diabetes, vascular disease)	6
Sterilization	4.8
Elderly primipara	3
Previous plastic	1.6
Erythroblastosis	1.1
Others	10.8

TABLE X. INDICATIONS, LISTED AS OTHERS

Obstructing tumor	Contraction ring
Carcinoma of the cervix	Fetal distress
Ruptured uterus	Prolapsed cord
Anomaly of genital tract	Fetal malformation
Uterine myoma	
Uterine inertia	Prolonged labor

Inspection of, and comment on, the indications is not noteworthy, as it parallels generally those of other reported series.

The choice of anesthesia is disclosed in Table XI.

TABLE XI. ANESTHESIA

Cyclopropane and/or Nitrous Oxide and/or Ethylene and/or Ether	202
Local infiltration and/or Pentothal Sodium and/or inhalation	150
Spinal and/or inhalation and/or local infiltration	41
Others (Ether, Ethylene)	7
Not reported	4

Cyclopropane with other inhalants would appear to be the prevailing choice, with local infiltration plus additions next. Morbidity in relation to the type of anesthesia is shown in Table XII.

TABLE XII. ANESTHESIA MORBIDITY

	Morbid	Non-morbid
Cyclopropane group	55 (22%)	147 (78%)
Local infiltration group	31 (20%)	119 (80%)
Spinal group	11 (27%)	30 (73%)

There was no evidence of advantage from the standpoint of morbidity in the type of anesthesia used.

The number of sterilizations occurring in this series of cesarean sections would seem, at first glance, to be startling. However, Lull, reporting on cesarean sections in Philadelphia for the years 1931 and 1941, reveals an incidence of 15 and 22 per cent, respectively. The incidence of sterilization in connection with or following cesarean section in this series is revealed in Table XIII.

TABLE XIII

Hospital	C.S.	Sterilizations	Per Cent
A	85	19	22.
B	77	1	1.3
C	64	11	17.
D	54	10	18.5
E	19	3	15.6
F	7	1	14.
G	10	0	
H	21	7	33.3
I	16	6	37.5
J	21	5	20.
K	4	0	
L	5	2	40.
M	22	8	35.

A closer study of the records in relation to hospital incidence suggests that the indication for sterilization is a patient-physician relationship, because, with a few exceptions, the sterilizations were done in private hospitals.

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ACUTE CORONARY INSUFFICIENCY

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A BROADENING medical comprehension of coronary artery disease has rendered necessary some revision in our conceptions of the physiological abnormalities in this group of diseases and their clinical, electrocardiographic, and laboratory manifestations.

The changing concept probably owes much of its impetus to the work of the German cardiologists, which is aptly summarized by Büchner[2] in a volume entitled *Die Koronärinsuffizienz*, published in 1939. It is interesting to note by way of comparison that a standard and excellent American text on heart disease published as recently as 1945 mentions coronary insufficiency only in a passing manner. Examination of two recent textbooks of pathology (one published in 1944 and one in 1945) reveals only a brief mention of coronary insufficiency in one. Perhaps since the spectacular clinical identification of coronary thrombosis, dating back to Herrick[3] in 1912, correlating the clinical and postmortem pathological changes has so occupied the attention of clinicians that they have failed to realize until more recently the multitudinous changes in physiological function, which can lead to symptoms of coronary insufficiency.

Initiated by the German school and fostered in this country by such men as Levy,[4,5] Master et al,[6-13] Boas,[1] Barnes and his collaborators,[14] a newer classification of coronary disease which embraces the various forms of acute coronary insufficiency has been developed.

Acute insufficiency of the coronary arteries implies a physiological or pathological inability of these arteries to supply the myocardium in whatever state of activity it may happen to be. Perhaps this may be simply stated as that which is necessary for the satisfaction of the myocardium in homeostasis.

A brief résumé of the conditions which may bring about acute coronary insufficiency must include physiologic effort, emotional strain, excessive use of tobacco, paroxysmal tachycardia, auricular fibrillation or flutter, heart failure, shock (surgical or nonsurgical), hemorrhage, high altitude flight, severe anemia, aortic insufficiency and stenosis, syphilitic coronary arteritis, digestive shift in blood flow, insulin shock, excess adrenali, gastroenteritis with pooling of the blood in the abdominal cavity, sexual intercourse, straining at stool, extremes of temperature, hyper- and hypothyroidism, pulmonary infarction and embolism, as well as reflex effects from other viscera.

The clinical pictures, as well as laboratory findings, presented in the four main types of acute coronary insufficiency are summarized in Tables I and II. The four groups are as follows:

Group I.—Acute evanescent coronary insufficiency or angina pectoris. The term angina pectoris should be retained because the clinical picture of pain and its radiation, as well as its relation to effort, exertion, emotion, and exposure to cold, and its relief by nitroglycerine, sets apart this type of insufficiency. The physiologic mechanism is undoubtedly a disproportion between the coronary blood flow and the needs of the heart muscle.

Group II.—Acute temporary coronary insufficiency of such severity and duration as to fail to produce demonstrable changes in the myocardium but of greater duration and severity than that seen in angina pectoris.

Group III.—Acute temporary coronary insufficiency of such severity and duration as to produce clinically demonstrable myocardial changes, chiefly subendocardial necrosis, but often referred to as myocardial infarction without thrombosis.

Group IV.—Acute permanent coronary insufficiency with massive myocardial infarction (coronary thrombosis). It might be mentioned that while acute coronary insufficiency may be productive of myocardial infarction, conversely, true coronary thrombosis, in the presence of an exceptional collateral circulation, may actually fail to produce myocardial infarction.

While at first glance it may seem that the difference between Groups I, II, and III is chiefly one of duration, there are in reality many other differential features worthy of mention. As a

*Presented before the Minnesota Society of Internal Medicine, May 31, 1947.

premise it may be stated that coronary sclerosis is at least a predisposing factor in all four groups (save perhaps occasionally in leutic aortitis or in cases of severe anemia or hemorrhage).

solute delineation may be offered, it is suggested that more protracted pain is more apt to be followed by definite change in the myocardium (Group III cases). Various other clinical fea-

TABLE I. ACUTE CORONARY INSUFFICIENCY

	Grade I Acute Evanescent Angina Pectoris	Grade II Acute Temporary Without Necrosis	Grade III Acute Temporary With Necrosis	Grade IV Coronary Thrombosis
Coronary Sclerosis	Usually Present +	Usually Present + or ++	Present + to +++	Present + to ++++
Exciting Cause	Emotion, Excitement, Exertion, Food, etc.	Same as for Grade I	Same as for Grade I	May be absent often at rest
Pain	Transient	Variable—Severe—often fairly prolonged	Variable, more prolonged than in II	Prolonged usually
Nitroglycerine	Relief	Variable, may relieve	Probably little relief	No relief
Nausea and vomiting	Absent	Rare	Rare	Frequent
Shock	Absent	Rare	Rare	Common
Heart sounds	Normal	Usually normal	May be normal, gallop rare	Gallop frequent, friction rub frequent
Heart rate	No change	No change usually	Tachycardia slight or absent	Tachycardia common, Arrhythmia common
Failure	Absent	Rare	Rare	Common

TABLE II. ACUTE CORONARY INSUFFICIENCY

	Grade I Acute Evanescent Angina Pectoris	Grade II Acute Temporary Without Necrosis	Grade III Acute Temporary With Necrosis	Grade IV Coronary Thrombosis
Fever	None	None	Slight	Usual (101°-103°)
Leucocytosis	None	None	Slight, variable	Nearly always—moderate to high grade
Erythrocyte Sedimentation rate	Normal	Normal	Slight Elevation	Elevated
Urobilinogen	None	None	None	Occasionally present
E. C. G.	No change— No ECG evidence— May occasionally show:— "RST" depression "T" inversion Absent "Q" waves	"RST" Depression "T" inversion Absent "Q" waves Prompt return to previous pattern	"RST" Depression "T" inversion Absent "Q" waves Usually prompt return to previous pattern	"RST" Elevation Cove-plane "T" progressing to "T" inversion. "Q" waves usually present Slow progressive pattern
Duration	Momentary	Hours to days	Days to weeks	Weeks to months
Myocardial pathology	None	None	Sub Endocardial Necrosis Also involving Base of Papillary Muscles	Massive Necrosis involving Endocardium Myocardium Pericardium
Compensable	No	Yes (?) (Master)	Yes (?) (Master)	No (?)

The exciting cause in the first three groups is definitely at variance with that to be found in Group IV, and this is especially important with regard to possible compensability of the various types of coronary insufficiency. The duration of pain is also of some significance, particularly in differentiating Groups II and III. While no abtures as seen in the table are relatively self-explanatory. With reference to physical and laboratory findings as shown in Table II, the presence of fever in acute insufficiency would definitely suggest a Grade III type of change; and more especially, elevation of the leukocyte count and sedimentation rate in the Group III cases

serves to differentiate them from the Group II cases.

The further differentiation of Group III cases from Group IV cases is accomplished by the electrocardiogram. The changes so characteristic of coronary thrombosis are not found in any of the insufficiency groups of lesser grade; and this is, of course, compatible with the pathologic changes which are characteristic of coronary thrombosis, namely, a through and through necrosis of the myocardium with involvement of endocardium, myocardium, and pericardium. In contradistinction, Group III cases will show a subendocardial necrosis due to failure of oxygenation at the terminal ends of the subendocardial vessels. These same changes are found in the bases of the papillary muscles. Similar changes are not seen in Groups I and II.

With reference to compensation, which was mentioned earlier, it is interesting to note that Master considers the acute insufficiencies, not due to thrombosis, as compensable. In the classification which is here presented, this would include cases in Groups II and III, which are apt to come on as a result of strenuous physical exertion; and while the subject certainly can be debated almost *ad infinitum*, there seems to be a moiety of truth in the fact that many coronary thromboses occur during inactivity, whereas most of the other insufficiency syndromes have a definite precipitating factor which may be associated with compensable activities.

With this classification in mind, a survey of two illustrative cases would seem to be in order.

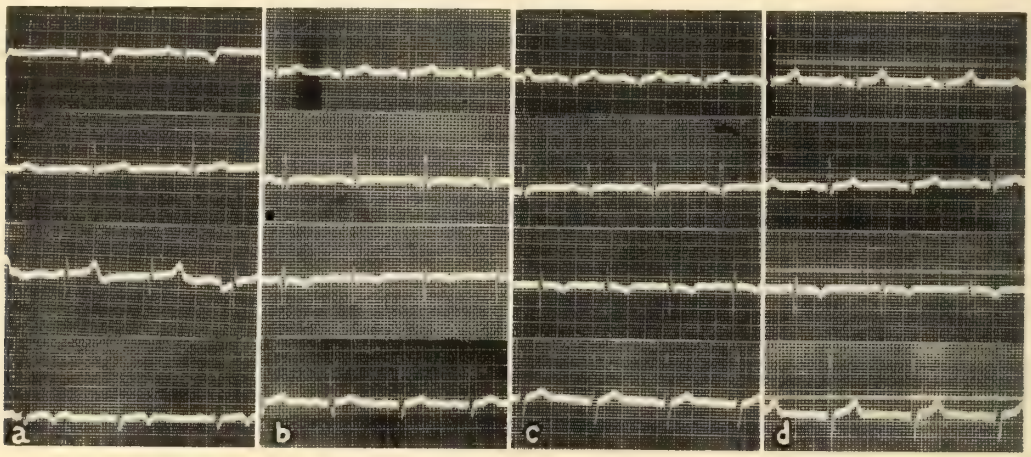


Fig. 1.

TABLE III

L.V.H.	E.C.G.	Pulse	Temperature	Blood Pressure	White Blood Count	Erythrocyte Sediment Rate (West) m.m.	Pain	Dyspnea
9-30-44	I*	60	98.6	128/88	15,200	10	Severe 3 hrs.	Present early
10- 1-44		76	98.8	124/86	12,800	8	0	0
10- 2-44	II*	84	98.6	128/86	9,550	12	0	0
10- 3-44	III	88	99.4	132/88	6,700	27	Severe to arms	0
10- 7-44		80	98.4	126/84	7,900	20	0	0
10- 9-44		80	98.6	128/86	10,200	23	0	0
10-11-44	IV*	88	99.0	134/88	9,500	31	0	0
10-13-44		82	99.2	140/88	10,600	43	0	0
10-16-44	V	80	98.0	136/86	9,200	25	0	0
10-21-44	VI*	78	98.6	140/90	9,600	29	0	0
10-23-44		76	98.2	142/90	8,400	20	0	0

Case Reports

Case 1.—The patient, whose essential data are summarized in Table III, was a thirty-seven-year-old, white, married man, who presented himself at the Charles T. Miller Hospital in Saint Paul on September 30, 1944, with a history of acute, severe, and moderately prolonged retrosternal pain, which had been present for three hours at the time of admission. Radiation into both shoulders and arms had occurred since early morning. The electrocardiograms which follow sequentially in Figure 1 are those which have been indicated

with an asterisk on Table III. It will be noted that the initial electrocardiogram (Fig. 1a) shows a rather bizarre picture consisting of a sharp inversion of T1 with a slight depression of ST1 and definite inversion of T4, which has a slightly positive component as well. tunately, prior tracings are not available, so that the eventual establishment of the Q3 T3 pattern must be considered to be either a residual of a previous thrombosis or as evidence of recent thrombosis. The way in which these changes appear, however, suggests more

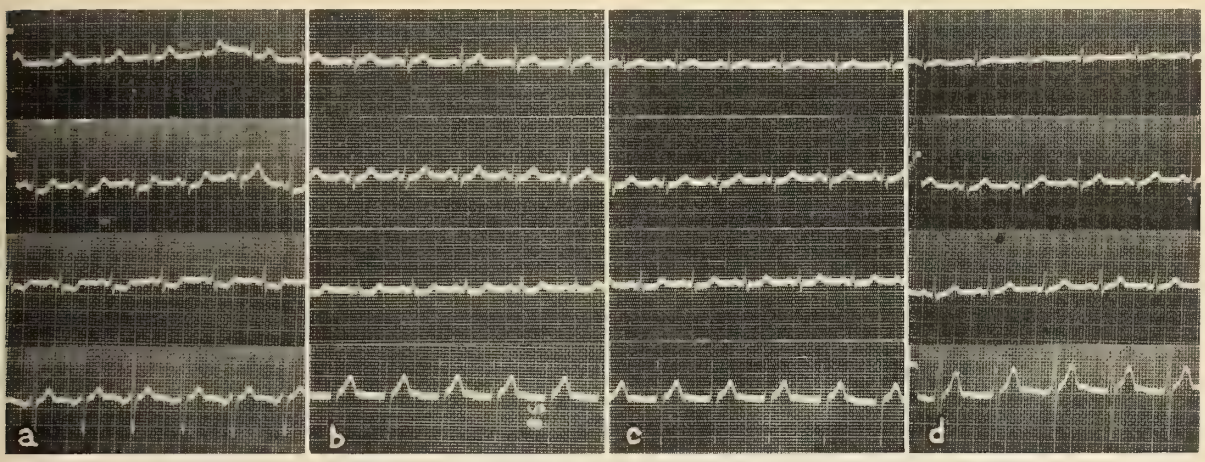


Fig. 2.

TABLE IV

R.G.M. (I)	E.C.G.	Pulse	Temperature	Blood Pressure	White Blood Count	Erythrocyte Sediment Rate (West) m.m.	Pain	Dyspnea
1-31-45	I*	104	97.0	148/102	9,850	9	Severe	Slight
2- 1-45	II*	100	97.4	170–158/100–94	9,100	5	0	0
2- 2-45		100	99.0	142–132/98–84	11,050		0	0
2- 3-45	III*	84	99.0	148–144/92–90	10,300	9	0	0
2- 5-45	IV	80	98.2	140–130/98–80	6,100	12	0	0
2- 7-45	V	74	99.0	124–122/76	7,950	8	0	0
2-23-45	VI*	78	98.4	142/84	9,350	3	0	0
4-25-45	VII	80	98.2	146/84		3	0	0

These findings are characteristic of acute insufficiency and well satisfy the Levy requirements for a diagnosis of coronary insufficiency. These spontaneous changes are in marked contrast to those seen in the next electrocardiogram (Fig. 1b), made forty hours later, wherein a complete reversal to a positive T1 and T4 has taken place; and we are now confronted with a Q3 T3 pattern. These same changes are present in the following two electrocardiograms (Fig. 1, c and d) which were taken twelve and twenty-four days after the initial tracing. It is interesting to recollect that there was a very slow change in the sedimentation rate, with no definite elevation occurring for five days, and a rather more marked elevation occurring at the end of two weeks. The interpretation of these tracings may be made along either one of two definite and probably acceptable variants. However, there can be little doubt that the original tracing must be considered as an excellent example of acute coronary insufficiency. Unfor- strongly the presence of a previous disturbance which makes the Q3 T3 pattern possible. One is forced to infer that the acute insufficiency present at the time of admission, together with the rather definite changes in the sedimentation rate, make this an instance of Group III coronary insufficiency, namely acute coronary insufficiency associated with definite subendocardial necrosis. This patient remained in the hospital four weeks, and was clinically well with the exception of a psychosomatic residive upon his discharge.

Case 2.—This case is of interest because in this patient two episodes, the first typical of Group II and the second typical of Group IV, occurred at an interval of approximately twenty months. The significant data for the Group II episode, or acute coronary insufficiency without necrosis, are shown in Table IV. The patient is a forty-one-year-old, white, married man, who pre-

sented himself at the office on January 31, 1945, with a history of retrosternal pain radiating over his entire chest into the left shoulder, and which lasted one hour. It occurred originally at 9:00 o'clock in the morning, and returned at 2:00 o'clock in the afternoon and re-

Table V were obtained. At this time pain in the chest was not an outstanding feature. The attack was ushered in by syncope, and the original tracing (Fig. 3a) made in the office showed changes very suggestive of a posterior infarction due to coronary thrombosis. Although

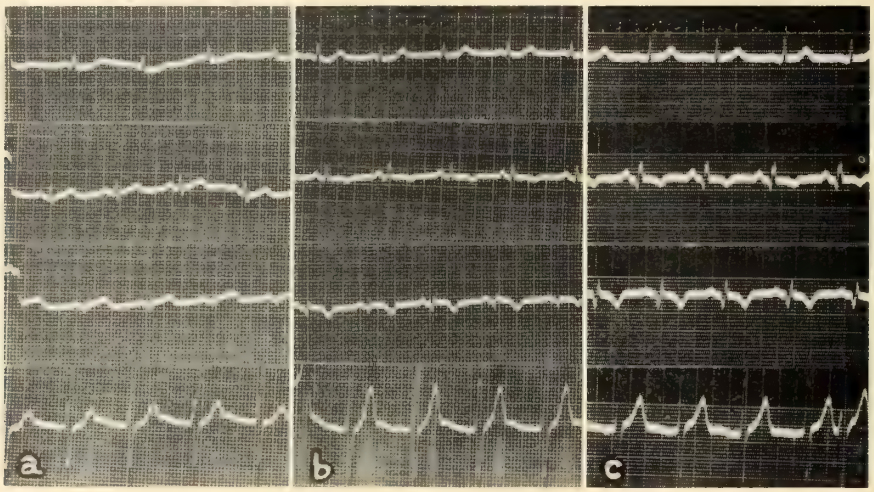


Fig. 3.

TABLE V

R.G.M. (II)	E.C.G.	Pulse	Temperature	Blood Pressure	White Blood Count	Erythrocyte Sediment Rate (West) m.m.	Pain	Dyspnea
9-17-46	IX*	84	98.6	122/70	10,250	5	Mild 9-16-46 with syncope	Slight 9-16-46
9-19-46	X*	64	99.8	142–116/ 84–70	11,050	30	0	0
9-20-46		72	98.2	130–122/ 80–76	8,350	31	0	0
9-23-46	XI*	74	98.8	128/84	10,150	37	0	slight
9-26-46		66	98.2	130/84	7,000	20	0	slight
9-30-46	XII	66	98.4	136/84			0	0
10- 1-46		72	98.2	142/86	5,490	9	0	0
10- 4-46	XIII	70	98.0	142/84	8,650	6	0	0

mained for slightly longer than one hour. He noticed perspiration and some shortness of breath at the time. Those electrocardiograms marked with an asterisk in Table IV are illustrated in Figure 2. It will be noticed that at no time was there a marked leukocytosis and that the sedimentation rate remained normal throughout the entire course. The initial electrocardiogram (Fig. 2a) shows a well defined depression of ST2 and ST3 which changes satisfy the Levy postulates for acute coronary insufficiency. The prompt return to normal as shown in the second electrocardiogram (Fig. 2b) is striking; and the maintenance of a normal state as shown in the following two tracings (Fig. 2, c and d) is equally striking. This patient felt entirely well twenty-four hours after the episode and remained so for the ensuing twenty months, when the data shown in the leukocyte count failed to demonstrate much change, the sedimentation rate certainly was significant. The following electrocardiograms (Fig. 3, b and c) show the progress of this very evident myocardial infarction. This case is most interesting and instructive in that it demonstrates marked evidence of coronary insufficiency without necrosis occurring along the distribution of the posterior coronary artery; and twenty months later a second attack was attended by findings of a definite thrombosis or complete occlusion in the distribution of this same vessel.

In summary, it would seem advisable to bear in mind that acute coronary insufficiency is a condition which is limited neither to the acute

evanescent changes of angina pectoris on the one hand, nor to the cataclysmic changes of coronary thrombosis on the other. From the multitude of clinical situations between these extremes, it has seemed possible to formulate two categories. In these subdivisions, the one without and the other with necrosis, there are two clinical syndromes founded upon the same premise, the Group III cases being productive of subendocardial necrosis and sedimentation rate changes, together with a longer clinical course and somewhat more severe symptomatology than that seen in the Group II cases. It would seem entirely possible, and probably advisable, to classify any symptomatic disturbance of the coronary physiology into one of these four groups, and by so doing, to express in definite terms a clinical picture or syndrome immediately understandable to all clinicians.

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A SURVEY OF CESAREAN SECTION IN MINNEAPOLIS

(Continued from Page 989)

Discussion

Recently Mack stated, "With the cognitant increased incidence of cesarean section on the one hand and the lowered mortality on the other, one might well ask whether too many sections are now being performed or whether too few took place in former years." A comparison of the results of cesarean section in Minneapolis in 1946 to the results in Ramsey County from 1937 through 1942, may to some extent answer both of these questions in the affirmative. The high fetal mortality in the Ramsey County series could be interpreted as an unnecessary delay for the operation. On the other hand, study of the maternal deaths individually in this same series might deny this conclusion. Rather, it would suggest an improvement in surgical techniques, methods of anesthesia, and the more recent advantages of the sulfonamides and especially the antibiotics.

Summary

1. A survey of cesarean sections in Minneapolis for the year 1946 is presented and compared to an earlier one in an adjacent area.

2. Roughly the results parallel those of surveys made in other localities in this country, in that the incidence is somewhat increased but the maternal mortality is significantly lower.

3. There is a lower morbidity from the low cervical type of operation, but the choice of anesthesia seems of no importance in this connection.

4. Cesarean section in Minneapolis, as revealed in a study of the cases in 1946, shows a higher maternal and infant mortality when compared to normal delivery for the same period. However, it must be concluded that cesarean section is done for relatively definite indications that jeopardize the life of the mother or the baby, a situation that cannot be analyzed statistically when related to normal vaginal delivery.

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PRIMARY IDIOPATHIC SEGMENTAL INFARCTION OF THE GREATER OMENTUM

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THE infrequent occurrence of primary idiopathic segmental infarction of the greater omentum was revealed when, in a review of the available literature,[6, 9] only twelve authentic instances of the condition could be found.[3] The present report is intended to bring attention to this apparently rare pathologic condition, which is of surgical significance because its symptomatologic features are similar to those of other acute intra-abdominal lesions. We wish, also, to report such a case in which the lesion was seen at the Mayo Clinic recently.

Antecedent Studies (Table I)

Johnson, in 1932, apparently was the first to record primary segmental infarction of the greater omentum. In his case the patient was a man, sixty-three years old, for whom the diagnosis of acute suppurative appendicitis with localized peritonitis had been made. At surgical exploration a portion of the greater omentum was found to be much thickened, infiltrated and partially gangrenous because of thrombosis in the omental vessels. An uneventful convalescence and recovery followed resection of the gangrenous part of the omentum. This case was complicated by the fact that the tip of the omentum was adherent to the scar resulting from repair of an old hernia, but the vessels were not twisted in their course at any point. Johnson said he thought that the etiologic factors leading to thrombosis of these vessels may include slowing of the blood stream in the omentum, first by the fixation of the organ to the old abdominal scar and, second, by the arteriosclerotic condition of the walls of the vessels, as was found at pathologic examination. Aortic regurgitation had also been noted at the physical examination.

Hines, in 1934, reported a case in which hemorrhagic infarction of the greater omentum involved the major portion of the omentum, but in this case the infarction was secondary to thrombosis of the portal vein. For this reason, Hines' case has not been included in the present review of this subject. Berger has reported a case of thrombosis of the left gastro-epiploic vein which resulted in a hemorrhagic infarction of the left third portion of the greater omentum. In this case the thrombosis in question was not associated with other venous thromboses in the abdomen, but the patient had cardiac insufficiency secondary to arteriosclerotic, hypertensive, syphilitic heart disease of several years' duration, which may have been a contributory factor to the thrombosis. Validity of the inclusion of this case in this series is debatable.

Pines and Rabinovitch have reported a series of six cases of apparently true primary idiopathic segmental infarction of the greater omentum which were collected from the files of the Jewish Hospital, Brooklyn, New York, from 1915 to 1939. This is the largest single series of such cases recorded in the literature. All patients in this series preoperatively had received the diagnosis of acute appendicitis, and all recovered after surgical exploration and resection of the infarcted portion of omentum. These authors pointed out that the symptoms of omental infarcts, in general, mimic those of acute appendicitis, with pain in the right lower quadrant of the abdomen being a more or less constant feature. The disproportion between abdominal tenderness, duration of symptoms and abdominal rigidity was pointed out as another striking feature of the syndrome of this disease. The abdomen usually is widely and definitely tender to deep palpation, but abdominal rigidity is not nearly so marked as might be expected when the possible duration of the complaint and the definite tenderness are considered. The authors also commented on marked hyperesthesia of the skin as an outstanding symptom which is not commonly seen in other acute intra-abdominal lesions. They felt that the mechanism involved in the formation of omental thrombi is similar to that produced experimentally on stretching a vein, with subsequent thrombosis caused by the injury of the endothelial lining of the vein; thus, the condition is secondary to some form of trauma.

Bang-Dietrichson recorded a case in which a woman, forty-six years old, with apparent pri-

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TABLE I. PRIMARY IDIOPATHIC SEGMENTAL INFARCTION OF THE GREATER OMENTUM: CASES REPORTED IN LITERATURE

Reported by	Patient		Leukocytes, Per cu. mm.	Diagnosis		Course
	Age	Sex		Preoperative	Postoperative	
Johnson, 1932	63	M	15,400	Acute appendicitis	Hemorrhagic infarct of omentum	Recovered
Pines and Rabinovitch, 1940	63	M	12,400	Acute appendicitis	Infarct of omentum	Recovered
	53	F	10,000	Acute appendicitis	Infarct of omentum	Recovered
	40	M	18,000	Acute appendicitis	Infarct of omentum	Recovered
	52	M	13,500	Acute appendicitis	Infarct of omentum	Recovered
	37	M	9,800	Acute appendicitis	Infarct of omentum	Recovered
	47	F	9,000	Acute appendicitis	Infarct of omentum	Recovered
Bang-Dietrichson, 1941	46	F	Not recorded	Acute appendicitis	Hemorrhagic infarct of omentum	Recovered
Totten, 1942	27	M	Not recorded	Acute appendicitis	Hemorrhagic infarct of omentum	Recovered
	29	M	15,500	Perforated duodenal ulcer or perforated acute appendicitis	Hemorrhagic infarct of omentum	Recovered
Durando, 1945	58	F	Not recorded	Acute appendicitis	Hemorrhagic infarct of omentum	Recovered
MacKenzie and Small, 1946	29	M	17,620	Acute appendicitis	Hemorrhagic infarct of omentum	Recovered
Present author	40	F	13,800	Acute appendicitis Pregnancy	Infarct of omentum Pregnancy	Recovered

mary hemorrhagic infarction in the greater omentum, was treated successfully by resection of the infarcted portion. His patient had had heart disease for many years, which may have been a contributory factor in the formation of a thrombus.

Schottenfeld and Rubenstein reported a case in which acute abdominal pain developed in a seven-year-old boy three days after he had sustained a kick to the abdomen by a playmate. This boy was thought to have acute suppurative appendicitis, but surgical exploration revealed a hemorrhagic omentum, with infarction of a portion of it. Uneventful recovery followed resection of the diseased portion of the omentum. In this case the hemorrhagic infarction clearly was secondary to trauma, so that inclusion of the case in this series of cases of idiopathic segmental infarction is open to question.

Totten reported two cases in which primary segmental infarction of the greater omentum was clear-cut and unaccompanied by complicating factors. The condition of one of his patients had been diagnosed as "acute appendicitis" and that of the other as either "subacute perforation of a peptic ulcer" or "acute appendicitis with perforation and local peritonitis." At operation each patient was found to have an infarct of a localized, distal segment of the greater omentum, without a coincident intraperitoneal pathologic condition. The author pointed out that in these cases the omentum was thick and fatty, a condition which in his experience is in marked contrast to that in the majority of cases of omental torsion, in which he had found the omentum to be thin, with a scanty amount of fat. He offered as a possible explanation of the cause of this condition the fact that the strain on the thin-walled veins between the stomach and omentum is increased at the time of vascular congestion incident to the ingestion of a full meal. During this period, additional strain from increased intra-abdominal tension, incident to straining, coughing, sneezing or lifting, may be sufficient to cause primary rupture of the dependent veins of the omentum, with hemorrhagic extravasation and secondary thrombosis. In support of this thesis, he said that one of his patients gave a history of heavy work in the handling of boxes weighing approximately 120 pounds (54.4 kg.) shortly after the noon meal and just prior to the onset of his abdominal pain.

Durando has reported a case of apparently authentic segmental infarction in which the patient recovered uneventfully after surgical resection of the involved segment of omentum. This author likewise pointed out the similarity of features of infarction of the greater omentum to those of acute appendicitis, and in respect to the former lesion, stressed the benign course leading to recovery after resection of the involved portion of omentum.

In 1946, MacKenzie and Small reported the most recently published case of this condition.

Their patient was a twenty-nine-year-old white man in whom generalized abdominal pain developed after the ingestion of 1 pound of cheese. Diarrhea first developed, and was followed by localized pain in the right lower quadrant of the abdomen. This pain later became more severe in the right upper abdominal quadrant. A diagnosis of "acute appendicitis" was made. At operation the appendix was found to be normal, but a large hemorrhagic necrotic mass, 11 by 7 by 4 cm., involving the right terminal portion of the greater omentum, was encountered. This exhibited venous thrombosis, with segmental infarction of the vessels, on microscopic study. The authors pointed out that this condition must be borne in mind when observations of the appendix do not explain the clinical symptoms present. They considered constipation to be of frequent occurrence among such patients, whom they described as being "bowel conscious."

Report of a Case

A white housewife, forty years old, was referred to the clinic on January 10, 1943, because of abdominal pain in the right lower quadrant of forty-eight hours' duration. Review of her history disclosed that she had been married for twenty years and had been pregnant three times and delivered normally in each instance. She had made one previous visit to the clinic in the preceding year, at which time a diagnosis of "cardiospasm with moderate dilatation of the esophagus" had been made and dilatation of the cardia had been carried out. Her menstrual history was characterized by regular periods with a twenty-one day interval, and her last menstrual period had occurred three months before the onset of the present illness. The family history was irrelevant to her condition.

Two days before the patient's entry, abdominal pain had developed in the right lower quadrant whenever the patient arose. This pain was constant, nonradiating, and was not accompanied by nausea. The pain persisted throughout the day, although the patient was ambulant, her appetite was good, and her distress was not too annoying. During the night of the date of onset of the pain she occasionally was awakened by the abdominal pain. On the next day the abdominal pain continued to be steady, sharp and nonradiating, in the right lower quadrant of the abdomen. The patient had regular bowel movements and had noted no other symptoms except that the pain seemed to be worse on motion of the body. On the day of her admission the patient had been seen by her local physician, who had made a diagnosis of "acute appendicitis" and had referred her to the clinic for treatment.

Physical examination revealed a well-developed and well-nourished white woman who was apprehensive and crying. Her systolic blood pressure was 128 mm. of mercury; the diastolic pressure was 76 mm. of mercury. Her pulse rate was 90 beats per minute. Her temperature at admission was recorded as being 98.6° F. (37° C.) Abdominal examination disclosed point tenderness of grade 2 (on the basis of 1 to 4, in which 4 is most severe) in the right lower abdominal quadrant, and voluntary spasm and rebound in the same area. Vaginal examination revealed the cervix to be soft and freely movable. The uterus was felt to be the size of a uterus two to three months pregnant. The adnexa appeared to be normal. Rectal examination revealed slight tenderness of the right lateral wall. Results of the remainder of the examination were within normal limits.

Examination of a catheterized specimen of urine revealed it to have a specific gravity of 1.016. Albuminuria of grade 1 (on a basis of 1 to 4) was present. Microscopic examination of the sediment of a specimen of centrifuged urine disclosed an occasional erythrocyte and 10 leukocytes per field, under low-power magnification. White blood cells numbered 13,800 per cubic millimeter; 82 per cent were polymorphonuclear neutrophils, 16 per cent were lymphocytes, 1 per cent were monocytes and 1 per cent were eosinophils.

A preoperative diagnosis of probable atypical acute appendicitis as well as intra-uterine pregnancy was made. Surgical exploration was advised and accepted.

Abdominal exploration, through a primary lower right rectus incision, was carried out on the day of the patient's admission. Spinal anesthesia with procaine hydrochloride was employed. A portion of the greater omentum, 3 by 3 cm., was found to be the site of an acute inflammatory reaction, and was excised. The remainder of the abdominal exploration disclosed nothing significant except for the enlarged uterus, which extended well above the symphysis pubis, was rather soft, and indicated a normal pregnancy. The appendix was removed and the abdomen was then closed. Five grams of crystalline sulfathiazole was left in the peritoneal cavity.

Microscopic examination of the excised omental tissue disclosed infarcted omentum. The appendix showed signs of chronic inflammation.

Convalescence was uneventful. The patient was dismissed from the hospital on the twelfth postoperative day, at which time she had no complaints.

Comment

Review of the cases of primary idiopathic segmental infarction of the greater omentum in the literature does not reveal any significant features which might be of aid in a definite, preoperative differential diagnosis between the lesion and acute appendicitis or other acute intra-abdominal lesions. Undoubtedly, this type of infarction of the omentum occurs more frequently than is indicated by the number of reported cases. In many instances it probably is not recognized because of the inability of the surgeon to carry out thorough exploration of the abdomen when a small McBurney incision has been made with the expectation that the pathologic process is situated in

the appendix or terminal portion of the ileum. It is not unlikely that a small percentage of patients thought to have "acute appendicitis" which is atypical and consequently is treated by medical measures, in reality have infarction of the greater omentum. We wish to add our voice to that of others who have suggested that this pathologic entity should be considered whenever surgical exploration fails to reveal pathologic changes in the appendix or other suspected organ or structure to account for the clinical symptoms, and that the omentum be inspected for evidence of a lesion or lesions which might explain such symptoms.

The course of infarction of the greater omentum not treated surgically undoubtedly is benign. When operation is not performed, the omentum probably adheres to adjacent organs or structures. Such early, fine adhesions between omentum, parietal peritoneum and bowel have been found at operation in cases of segmental infarction of the greater omentum.

Summary

A case of primary idiopathic segmental infarction of the greater omentum has been presented, and twelve previously reported cases in the literature have been reviewed. Apparently there are no diagnostic criteria by which a preoperative diagnosis of the lesion can be definitely made. All the patients in reported cases have recovered uneventfully after excision of the infarcted segment of omentum. Recognition of this pathologic entity probably would be more frequent if the omentum were thoroughly inspected in all cases in which sufficient pathologic evidence to account for the clinical symptoms has not been clearly demonstrable.

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EPITHELIOMAS OF THE LOWER LIP

(Continued from Page 986)

factory end results are to be anticipated in those cases in which no involvement of the nodes is demonstrable at the time of their removal.

Dissection of the cervical nodes is hardly justifiable if the primary lesion is graded 4. Under these circumstances, much more can be accomplished by roentgen and radium treatment to the neck than by dissection of the cervical nodes. As a matter of fact, many lesions of Grade 4 malignancy on the lips can be completely cured by irradiation if they have not produced generalized metastasis.

Dissection of the cervical nodes is undesirable for patients of advanced age, in poor general physical condition or with too extensive involvement of the nodes in the neck. Under these circumstances, irradiation may be considered. It is true, of course, that metastasis is less likely to develop in elderly individuals and, consequently, the removal of cervical nodes as a prophylactic measure is not advocated for patients who are more than seventy years of age. When involvement of the cervical nodes is so extensive as to contraindicate dissection of the cervical nodes, irradiation is recommended as a palliative rather than a curative measure.

PENICILLIN AND STREPTOMYCIN AEROSOL THERAPY FOR CHRONIC BRONCHIECTASIS

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BRONCHIECTASIS is a serious disease which merits the attention of all physicians. Since it often goes unrecognized in its early phases, a chronic cough always should be investigated carefully. A positive diagnosis of bronchiectasis can be made only after complete bronchographic studies, for the symptoms and even the roentgenogram of the chest cannot be relied on in making the diagnosis.

In chronic bronchiectasis, the smaller bronchial tubes in the periphery of the pulmonary segments are dilated permanently. Cure can be effected only by removal of the segments of the lung that are involved. The symptoms of bronchiectasis are those of its complications. Secretions which accumulate in the dilated bronchi become infected and produce a chronic inflammatory process in the walls of these bronchi. As a rule, the infection associated with bronchiectasis is non-specific rather than specific. Thus, many types of bacteria are found in the secretions which constantly form in these bronchi. The common bacteria which can be demonstrated in the sputum of these patients are listed in Table I.

The nonsurgical treatment of bronchiectasis includes the effective drainage of the infected secretions and the destruction of the bacteria in the secretions and in the bronchial mucosa. Postural drainage is a time-honored method of helping to eliminate purulent secretions from the bronchial tree and should be employed in every case of bronchiectasis. Bronchoscopic examination is of particular value in the exclusion of organic obstruction in the larger bronchi and temporarily helps the patient in his struggle to rid himself of the noxious secretions which constantly form in the infected bronchi. Antibacterial agents have assumed a definite place in the management of infected bronchiectasis. The oral and parenteral administration of sulfonamides and antibiotic preparations has proved of limited value in the reduction of the volume of infected bronchial secretions but certainly has aided in the prevention of complications following pulmonary resection for bronchiectasis. In recent months it has been demonstrated that the introduction of antibiotic preparations into the tracheobronchial tree is the most effective means of combating infection associated with bronchiectasis.

TABLE I. COMMON PATHOGENIC BACTERIA FOUND IN BRONCHIECTATIC SECRETIONS

Gram Positive	Gram Negative
Pneumococcus	Escherichia coli
Streptococcus	Hemophilus influenzae
Hemolytic type	Aerobacter aerogenes
Nonhemolytic type	Klebsiella
Staphylococcus	Pseudomonas aeruginosa
Micrococcus	Proteus

Methods of Administration of Antibiotic Agents

The two principal methods by which solutions of penicillin or streptomycin can be introduced into the bronchi are as follows: Solutions may be instilled directly into the trachea through the bronchoscope, through a tracheal catheter, or by supraglottic instillation with a syringe and tracheal cannula. The other method consists in having the patient inhale a mist or aerosol of the solution. Both of these methods have their advantages and disadvantages.

In our experience, direct instillation of antibiotic preparations into the bronchial tree is accomplished most satisfactorily by the supraglottic method. It usually is necessary to introduce 1 or 2 c.c. of a 5 per cent solution of cocaine into the trachea with a syringe and tracheal cannula. This procedure will provide sufficient local anesthesia to permit the patient to retain the solutions that will be instilled. Penicillin sodium is dissolved in physiologic saline solution in a concentration of 20,000 units per cubic centimeter, and 5 or 10 c.c. of this solution is instilled slowly. When streptomycin hydrochloride is used, it is dissolved in physiologic saline solution in a concentration of 0.1 gm. per cubic centimeter and, again, 5 to 10 c.c. may be employed. If the patient will lean either to the right or left side as he sits in his chair, the solution may be instilled into either side of the bronchial tree. If penicillin sodium and streptomycin hydrochloride are used, the solutions may be mixed and given at one time.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.
Read at the meeting of the American College of Physicians, Chicago, Illinois, May 1, 1947.

Supraglottic instillations may be given daily for many days. The success of this form of treatment depends on the ability of the patient to cooperate. It is desirable that instillations be given when the patient's stomach is empty. Postural drainage exercises should be carried out before each treatment. This method of treatment is much more effective when the patient is able to retain the solution for several hours than when he can keep it only a short time. Many patients are able to retain the solution without the benefit of local anesthesia.

Supraglottic instillations require some expertness on the part of the physician as well as the cooperation of the patient. A large dose of penicillin or streptomycin or both may be given in a short time. For patients who have a large volume of purulent bronchial secretion, the supraglottic method has been effective, especially when employed as an adjunct to aerosol therapy. Disadvantages of the method are the frequent use of cocaine or a similar agent to produce local anesthesia and the fact that some patients are completely incapable of retaining the solutions.

Administration of nebulized antibiotic agents has been employed in nearly all of the cases of bronchiectasis treated at the Mayo Clinic. We have used either the Vaponefrin or DeVilbiss No. 40 nebulizer. Although we have tried the nebulizers equipped with large condensing bulbs or with rebreathing bags, we have returned almost invariably to the standard nebulizer because it is convenient and easy to handle. For hospital practice we have continued to use compressed oxygen as a source of positive pressure. For home treatment many patients have obtained small electric motors and air compressors or have used foot-operated air pumps.

We have been using penicillin sodium in concentrations ranging from 10,000 to 25,000 units per cubic centimeter. We usually give 200,000 to 400,000 units of penicillin daily. We have continued to use streptomycin only in cases in which Gram-negative organisms predominate in the sputum after a period of treatment with penicillin alone. In general, we find it desirable to mix streptomycin hydrochloride with penicillin sodium. Thus 200,000 to 400,000 units of penicillin and 0.5 to 1.0 gm. of streptomycin are dissolved in 16 to 20 c.c. of physiologic saline solution. Patients can nebulize 1 c.c. of solution in ten or fifteen minutes. Hospital patients are asked to nebulize 2 c.c. every hour for eight or ten hours each day.

Preoperative Management of Bronchiectasis

Bronchoscopic examination and complete bronchographic studies are carried out in all our cases of bronchiectasis in which pulmonary resection is considered. Before lobectomy or pneumonectomy is performed in the suitable cases, it is desirable that most of the iodized oil retained in the healthy lung tissue after bronchographic studies be coughed up or absorbed. Whenever possible, nebulization therapy is instituted in the waiting period. Penicillin is used routinely, and streptomycin is used in cases in which Gram-negative bacteria are found in the sputum. Daily supraglottic instillations are carried out in some cases. The length of preoperative treatment depends on the volume of purulent secretions and the amount of lung tissue to be resected. Patients who have bilateral involvement are given a much longer course of preoperative treatment. In the usual case in which bronchiectasis is confined to one lobe, five to seven days of preoperative treatment is adequate. In the forty-eight hours prior to operation our patients now receive large doses of penicillin by intramuscular injection. Postural drainage exercises are employed in all cases.

It has been our definite impression that the preparation of patients for lobectomy with penicillin aerosol has been most helpful in preventing postoperative complications. Although in occasional cases empyema occurs, the incidence of complications following pulmonary resection for bronchiectasis has been very low.

Nonsurgical Management of Bronchiectasis

Unfortunately, many patients who have bronchiectasis are not suitable candidates for pulmonary resection. These patients often are the ones who are most desperately in need of help. Frequently they are dyspneic and chronically ill and often have disease of the accessory nasal sinuses. Their sputum often has a foul odor, and they are virtual outcasts from society.

No treatment will cure these individuals of their bronchiectasis. From experience we know that sufficient rest and good nutrition, a favorable climate and regular postural drainage will help them to control the bronchorrhea. Aerosol therapy has been of great benefit in a good many of these cases. However, a much longer period of in-

tensive treatment is required than in the preoperative cases. Most of our patients have been hospitalized for their initial course of treatment, which may last from two to six weeks. Inhalation treatment with penicillin is started on admission. Stains and cultures of the sputum are made twice a week. An accurate chart of the daily volume of sputum is kept, and notations are made of character and odor of the secretions. Postural drainage is carried out before each meal and at bedtime. After a few days of treatment with penicillin, Gram-positive bacteria begin to disappear from the sputum and Gram-negative organisms may predominate. When this occurs, streptomycin is added to the solution. If a marked reduction in the amount of sputum is not obtained by this method of treatment, daily supraglottic instillations of penicillin and streptomycin are begun. The supraglottic instillations have been particularly effective in cases in which bronchorrhea is excessive and in which pulmonary fibrosis and emphysema are associated. When the daily volume of secretions has been reduced by 75 per cent or more, the patient is allowed to return home. He is asked to continue treatment at home, using 100,000 units of penicillin in 5 c.c. of physiologic saline solution each day. The patient regulates his further treatment by the amount of trouble he is having. Some patients control their symptoms by taking treatment two or three days a week. Others are able to go long periods without any treatment.

Results of Treatment

Arbitrarily, my colleagues and I have regarded response to treatment as satisfactory if the quantity of bronchial secretion is reduced by 75 per cent or more. In about 60 per cent of seventy-five cases of nonsurgical bilateral bronchiectasis, the use of penicillin aerosol alone has produced satisfactory results. Streptomycin has been used in conjunction with penicillin in many cases in which Gram-negative bacteria appeared in the sputum. Penicillin and streptomycin aerosol therapy have produced satisfactory results in 90 per cent of cases. Many of the patients received supraglottic instillations to supplement aerosol treatment.

After cessation of treatment, recurrences of bronchorrhea are common, especially after acute upper respiratory infections. Obviously, this aerosol treatment does not cure bronchiectasis, but it has made the lives of a good many patients comfortable. In a few of our cases, symptoms have recurred and have not responded to further intensive treatment. In such cases we have been able to demonstrate bacteria in the sputum which are resistant to penicillin and streptomycin. Streptococcus faecalis has been a difficult organism to control. One patient has had an infection due to a type of colon bacillus which was resistant to streptomycin. It is our impression that Gram-negative bacteria are more likely to become resistant to streptomycin than are Gram-positive bacteria to penicillin. In some instances we have given a 5 per cent solution of sodium sulfathiazole by nebulization with apparent benefit. Fungus organisms found in bronchiectatic secretions are not sensitive to penicillin or streptomycin. However, such organisms seem to disappear as the bacterial invasion is checked.

Comment

Undoubtedly, many improvements will be made in this program outlined for the management of bronchiectasis. The use of vasoconstrictor solutions, such as neosynephrine hydrochloride, appears to have a place. Some authorities have used solutions of hydrogen peroxide as the medium for giving penicillin by nebulization. Penicillin has been mixed with iodized oil for supraglottic instillations. Oronasal masks have been employed, and an automatic demand valve of the Emerson type has been used to replace the finger-operated Y tube. Plastocele hoods have been designed for giving aerosols to infants and children, and aerosols have been produced in sealed rooms or compartments. New and more efficient nebulizers undoubtedly will be manufactured, and equipment for nebulization therapy certainly will be simplified and made more readily available.

Aerosol therapy and the intrabronchial use of antibiotics and other drugs have a definite place in the treatment of bronchiectasis. However, it must be remembered that a complication of bronchiectasis rather than the primary disease is being treated. The results of aerosol therapy are likely to be temporary, and continued or intermittent treatment is essential if improvement is to be maintained. The patient must be reminded that he is still subject to the hazards of a serious bronchial disease.

CLINICAL-PATHOLOGICAL CONFERENCE

A REVIEW OF 100 CASES OF RENAL FAILURE

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These 100 case studies were selected from 3,400 necropsy records on the basis of renal failure occurring as a most important factor in the causes of death. All cases of extra renal azotemia were excluded. The material represents the experience of twelve and a half years and 107,000 admissions to this general hospital. We have used a modification of E. T. Bell's classification[1] of renal diseases, so that the cases will be divided into eight groups: malformations, obstructions of the urinary tract with hydronephrosis and without pyelonephritis, pyelonephritis, glomerular nephritis, tubular diseases, vascular diseases, metabolic disorders, and tumors of the kidney.

Malformations

There was one case of fatal renal insufficiency in each of the congenital diseases: renal agenesis, cystic disease, uretheral valve, and congenital stenosis of the proximal ureteral orifice.

Of particular interest in this group was the case[2] of a boy, aged three and one-half months, who had had mild digestive disturbances for one month. He was considered seriously ill with vomiting and weakness for only a few days before he expired with a blood urea value of 214 and a creatinine level of 5.3 mg. per cent. The necropsy revealed two semilunar valves in the lower prostatic urethera, with extreme dilatation of the proximal urinary tract and resultant advanced pressure atrophy of the kidneys. In contrast, is the seventy-three-year-old woman who expired in uremia as the result of severe bilateral congenital stenosis of the proximal ureteral orifices with bilateral pyelonephritis.

Hydronephrosis Without Pyelonephritis

In the group of renal insufficiency due to hydronephrosis without the complication of kidney infection there were five cases. One each of the diseases, prostatic, bladder and pancreatic carcinoma, prostatic hypertrophy and prolapse of the uterus, were represented.

The case with the prolapsed uterus in a seventy-two-year-old housewife is in some respects the most interesting of the entire study. The multiparus woman had known of her prolapse for thirty years. It extended 9 inches below the vulva, and when returned to its proper position by her physician, Dr. Elizabeth Bagley, there was a spontaneous gush of a great volume of urine. She was *in extremus* when admitted and expired within twelve hours. The necropsy revealed a grade IV hydronephrosis with mere shells of kidneys remaining. The bilateral hydroureter began a few centimeters above the urinary bladder on each side.

Pyelonephritis

The cases with interstitial kidney infections leading to renal failure were divided into those with urinary tract obstruction, numbering twenty-six, those without urinary passage obstruction eight, and those with tuberculosis three (Table I).

TABLE I. DISEASES OF INTERSTITIAL TISSUE—PYELONEPHRITIS

A.	Pyelonephritis with urinary obstruction	
	1. Urethral stricture	1
	2. Prostatic hypertrophy	11
	3. Prostatic cancer	1
	4. Bladder cancer	4
	5. Cervix cancer	5
B.	Pyelonephritis without urinary obstruction	8
C.	Specific infections	
	1. Tuberculosis	3

In the first group with obstruction of the urinary tract were eleven patients with benign prostatic hypertrophy, all of whom were over seventy years of age except for three who were sixty-three, sixty-seven and sixty-nine years old. The creatinine level at death averaged 4.7 mg. per cent. There was no significant systolic or disastolic hypertension present in these patients.

A review of the eight cases of pyelonephritis without urinary tract obstruction revealed all the patients under the age of seventy years except for three who were seventy-six, seventy-seven, and seventy years old. The youngest was forty-seven. Very high creatinine values were reached before death, averaging 12.3 mg. per cent. There was no significant hypertension in this group. Most of these patients had 100 pus cells or more per high power field in their urinary sediment. A correct antermotem diagnosis was not made in a single case, possibly because of the many infectious complications found in these pyelonephritic patients.

There were twenty cases with bronchopneumonia among the twenty-four patients in the pyelonephritic series, while among the seventy-six patients of all the other causes of renal failure there were only seventeen with bronchopneumonia. Of the other serious infectious complications besides pneumonia, there were twenty in the entire 100 cases studied. Seventeen of these occurred in the pyelonephritic series. Uremic pericarditis was not considered infectious. It was fairly equally divided in the various groups and was found in fifteen cases.

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Glomerular Diseases

There were sixteen cases of glomerular nephritis divided between acute (four), subacute (two), and chronic (ten) (Table II). Our classification varies from that of Bell's in that we did not divide the glomerular nephritis cases into nephritic and nephrotic types. We did not have a single case of so-called lipoid nephrosis, in the more widely accepted sense of the term. There were thirteen of the sixteen cases of glomerular nephritis with severe edema, while in the entire study of eighty-four other cases there were only fifteen additional patients with severe edema of tissues at the time of death. None of our four cases of acute glomerular nephritis had hypertension. Francis Murphy, however, finds that 75 per cent in a large series of acute glomerular nephritis cases develop hypertension.

TABLE II. GLOMERULAR DISEASES

A.	Glomerular nephritis	
	1. Acute	4
	2. Subacute	2
	3. Chronic	10
B.	Lipoid nephrosis	none
C.	Amyloid disease	2
D.	Focal embolic nephritis	1

Nine of the patients with chronic glomerular nephritis were under sixty years of age, while the tenth was sixty-eight. All of the patients with chronic glomerular nephritis had moderate hypertention, and in only three the systolic pressure was over 200 mm. mercury. Only five of the hearts weighed over 400 grams, and the heaviest was 595 grams. The kidneys of three patients were 150 grams each, or more, while all the remainder were severely reduced in weight. Bell found no relationship between the size of the kidneys and the size of the heart, or between the size of the kidneys and the blood pressure, in patients dying with chronic glomerular nephritis. The average last creatinine value in our group was 6.5 mg. per cent. The urinary sediment showed not more than 0 to 50 red blood cells and 0 to 50 white blood cells per high power field.

Tubular Disease

We found one case each of bichloride and sulfathiazol injury of the kidneys leading to death. The latter occurred when the drug was first introduced for general use and before the importance of maintaining maximal fluid intake, alkalinization, and observation of the white blood cell count and the urine sediment were fully appreciated. The great wonder is that we have not had more deaths, considering the number of patients receiving sulfonamide drugs. Two additional patients in the tubular disease group expired as the result of plugging of tubules of the kidneys by casts of unknown nature.

Vascular System Disease

Our largest single group of patients in the study was that of the arteriolosclerotic series (Table III), which totaled twenty-four cases. Three patients died primarily as the result of arteriosclerotic nephritis. Five had diabetes mellitus with renal failure. The one patient with bilateral cortical necrosis was a forty-nine-year-old woman who expired after five days of anuria developing immediately following a spontaneous delivery of a normal child.[3]

TABLE III. BLOOD VASCULAR SYSTEM

A.	Arteriosclerotic (large artery)	3
B.	Arteriolosclerotic (small arteries)	24
C.	Diabetes mellitus	5
D.	Infarction cortical necrosis	1

A review of the large arteriolosclerotic series reveals a number of interesting points. These patients died at all ages between twenty-two and ninety years. All had severe systolic and diastolic hypertension except for five patients who had debilitating complications. The remarkably large hearts weighed from 500 to 760 grams except for two weighing 305 and 350 grams. In Bell's patients, 95.5 per cent of the male hearts weighed over 400 grams, and 83 per cent of the hearts of females were over this weight. Eighty-two per cent of Bell's large series had systolic pressures over 200 mm. mercury. The kidneys in our series averaged below 150 grams each in weight and ranged from 35 to 170 grams. The average creatinine value of our series was 7.0 mg. per cent at the time of death.

Five patients with Kimmelstiel-Wilson syndrome (diabetes mellitus, hypertension, 4-plus albuminuria and sclerotic changes in small arteries and glomerular capillaries) expired as the result of renal insufficiency. Thirty-three of 149 cases of diabetes mellitus in Bell's series died in uremia; of these, only eighteen had structural changes in the kidneys.

Metabolic Disorders and Neoplasms

There was only one death in this study due to pyelonephritis complicating renal calculi. The cause of the calculi was not apparent.

The last unusual case was that of a sixty-three-year-old male with a Wilms tumor of the right kidney, which metastasized to the hilar region of the left kidney, eventually terminating in uremia.

Summary

A brief review of 100 cases of renal failure due to kidney diseases culled from 3,400 necropsies is presented.

Several unusual and rare conditions, including uretheral valves, congenital ureteral orifice stenosis, uterine prolapse with extreme bilateral hydronephrosis, bilateral cortical necrosis and Wilms tumor in a sixty-three-year-old male, were found in the study.

The largest single group (24 per cent), with arteriolosclerosis, had outstanding high blood pressures and huge hearts. Five diabetic patients expired because of sclerotic changes in small arteries and capillaries of the kidneys. Renal failure resulted from sclerosis of the large renal arteries in three patients.

Thirteen of the sixteen patients with glomerular nephritis had severe edema at the time of death, while there were only fifteen additional patients with severe

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN COTTONWOOD COUNTY

L. L. SOGGE, M.D.
Windom, Minnesota

(Continued from August issue)

Dr. William David Moir Beadie (1874-1941) was born of Scottish parents in Toronto, Canada, on June 15, 1874, and lived there until his family moved to Montreal when he was thirteen years old. He was graduated in medicine from McGill University in 1900 and practiced medicine in Windom, Minnesota, from 1901 to 1910, moving then to Saint Paul where he remained in general practice until, in 1917, he became superintendent of Pokegama Sanatorium. From Pokegama he went to Cannon Falls to take over direction of the Mineral Springs institution in 1923.

In 1903 he married Miss Elizabeth McGregor of Windom. To this union was born a son, William McGregor Beadie, who now resides in Saint Paul with his two sons, David Moir Beadie and William Merrill Beadie.

During the period of his practice in Saint Paul, Dr. Beadie was a member of the medical staffs of the University Hospital, the City and County Hospital, the Gillette State Hospital and the Jean Martin Brown Home for Orphans. He was also a member of the Ramsey County Medical Society until his death and of the Minnesota State Medical Association, the American Medical Association, the Minnesota and the American Trudeau Societies and the National Tuberculosis Association.

When Dr. Beadie took over the direction of the Mineral Springs Sanatorium at Cannon Falls—the institution which absorbed all of his interest for seventeen years—he found an institution of twenty-five beds, a limited untrained personnel, small equipment and supported by only three counties. When he retired because of ill health on January 1, 1941, he left a completely modern institution of 110 beds, staffed by trained personnel, supported by six counties and ranking third among tuberculosis institutions of the state. The work and planning and devotion entailed in such an achievement was clearly hard and exhausting.

The growth of the Mineral Springs Sanatorium under Dr. Beadie's direction was remarkable. There is a modern four-story building now, in place of the original twenty-five bed institution, with its own power plant, concrete water reservoir, nurses home, laundry and house for the superintendent. Modern x-ray equipment and a well-equipped laboratory have been added. The institution is staffed with registered nurses—indeed it was the first tuberculosis institution of the state to employ only registered nurses. Patients of the institution have radio earphones at each bedside. They publish their own monthly magazine, *The Sanscript,* which, incidentally, devoted an entire issue to praise of Dr. Beadie and his work when he retired from office. They have a Sanatorium book club to supplement the permanent institution library

and they are encouraged to do all kinds of suitable hand work and occupational therapy.

The Sanatorium also has a full-time field nurse as the result of Dr. Beadie's efforts, and clinics are held throughout the district under direction of the superintendent. The district which began with Goodhue, Rice and Dakota Counties, now includes Olmsted, Mower, and Freeborn, all of which assist in support of the institution.

Obviously, Dr. Beadie made a far-reaching contribution to the control of tuberculosis in Minnesota. He devoted the major part of his professional life to its prevention and cure and led in the statewide sanatorium movement which has worked so vigorously in Minnesota for isolation for all active cases of tuberculosis and for periodic examinations of all who have been in contact with active disease.

When ill health forced him to retire from the Sanatorium in 1941, Dr. Beadie went back to Windom where he first started the practice of medicine forty years ago, and where Miss Margaret McGregor, sister of Mrs. Beadie, still lives. His death on February 7, 1941 cut short a plan to build a home and live there in quiet and retirement.

Affiliate membership in the Minnesota State Medical Association to which Dr. Beadie became eligible at his retirement, was not awarded until after his death. The permanent bronze membership card, now awarded to all affiliates, was presented by order of the Council to his family.

Dr. Beadie was a gentleman, a distinguished physician, and a recognized authority on the care and control of tuberculosis in Minnesota.

Among his fellow physicians he will long be remembered as a beloved colleague who upheld the best and highest ideals of his profession and as a leader in the development of our fine system for care of the tuberculous sick in Minnesota. Among his hundreds of patients at Mineral Springs Sanatorium he will be remembered as a friend who never failed them in kindness and generosity and who brought health and hope to many who otherwise would have died unaided.

In the passing of Dr. Beadie, the Minnesota State Medical Association as well as the Ramsey County Medical Society of which he was a member for so many years, lost one of its finest exemplars of devotion to duty and to the highest ideals of medical practice.

John H. Tilford (1841-1899) was for many years, from 1878, one of the leading and most successful physicians and surgeons of Windom, Cottonwood County, Minnesota. The place of his nativity is found in Jefferson County, Indiana, where he was born on November 28, 1841.

The parents of Dr. Tilford were Joseph M. Tilford and Mary A. Maxwell Tilford, natives respectively of Kentucky and Indiana. Joseph M. Tilford left Kentucky when about twenty-one years of age and settled in Madison, Indiana, where he engaged in the cabinet making business. He carried on an extensive trade until 1851, when he removed to the city of Indianapolis, where he engaged in the same business. In 1856 he sold out and purchased the *Indiana State Journal,* of which he became the publisher. When the hard times came, in 1870, his business had to be abruptly closed, and he retired to private life.

John H. Tilford, one of a family of nine children, received early educational advantages of a high order. After completing a course in the district schools, he went, at the age of eighteen years, to Northwestern Christian College in Indianapolis, where he was a student several years. He then began the

study of medicine in Indianapolis with Drs. Jamison and Funkhouser, with whom he continued for three years. He next attended medical lectures at the University of Michigan, Ann Arbor, during the winter of 1861-1862. In the spring of 1862 he accepted an invitation from his old preceptor to enter the city hospital of Indianapolis to assist in caring for the sick and disabled.

In August, 1862, Dr. Tilford was commissioned as assistant surgeon of the Seventy-ninth Indiana Regiment of Volunteer Infantry, and with a portion of the regiment he went to Louisville, Kentucky. Throughout the war he served as military surgeon, in Kentucky, Tennessee, Georgia and Alabama; always on duty, during three years he never left his command.

On being mustered out of the service, he returned to Indianapolis. During the winter of 1865-1866 he attended a course of lectures at Bellevue Hospital Medical College. He then returned again to Indianapolis, where he practiced medicine for one year. His next move was to Pittsborough, Hendricks County, Indiana, where he engaged in medical practice for nine years. During this time, in 1872, he was graduated from the Indiana Medical College. In 1878 he took an ad eundem degree in medicine from Butler University. On leaving Pittsborough, Dr. Tilford settled in Irvington, Marion County, Indiana.

In October, 1878, Dr. Tilford arrived in Windom, Minnesota. A man of excellent qualifications, highly educated, a master of the details of his profession, he built up in Windom a successful and lucrative practice, and he became a leading and influential member of the Minnesota State Medical Association. A constructive citizen who took an active part in public matters, he served as coroner of Cottonwood County and as a member of the board of his township and on the local school board. His numerous investments in various kinds of property were successful. On several lots that he purchased in the city he built an elegant residence and a well-equipped office.

Dr. Tilford was a member of the Republican Party. He belonged to the Masonic Lodge, the Independent Order of Odd Fellows and the Ancient Order of United Workmen, and the Grand Army of the Republic.

John H. Tilford was married in 1866 to Luna Meak, a native of Greenfield, Indiana. This lady possessed a superior education and was a graduate in music; she was an instructor in music for a number of years in Indianapolis, Noblesville and Greenfield, Indiana. Dr. and Mrs. Tilford had two children, Fred M. Tilford and Mattie R. Tilford. Dr. Tilford died in Windom on September 6, 1899.

Dr. Tilford and the late distinguished Dr. Harvey W. Wiley (1844-1930) were first cousins and good friends who corresponded regularly with each other. Dr. Wiley, a native of Kent, Indiana, was a son of Preston P. Wiley and Lucinda W. Maxwell Wiley.

Reminiscent comments have come from Dr. Tilford's daughter, Mattie (Mrs. William F. Sanger), of Windom:

> As a pioneer doctor, Dr. Tilford had some serious experiences. Though I was a small girl, I well remember a few, because I was impressed by my mother's deep concern and worry over the terrible blizzards we had in the winters then. There were no telephones, and many times my father would be gone for two or three days at a time. On one occasion, with a driver, he started out in a bad blizzard and became lost. Both men got out of the rig to look for tracks and both fell into an old cellar; they managed to crawl out, recover the team, and finally reach their destination. My father always depended much on his horses and thought a great deal of them; he felt that if he ever became hopelessly lost the horses would eventually get him to a farm house or would bring him home. Often, when roads were impassable, he was obliged to leave the team and walk home, and many times, although

he dressed as warmly as possible, with all he could carry, he reached home with icicles hanging from his eyelashes, nose and mustache, his cheeks frosted and also his feet. But whatever the weather conditions, if humanly possible, he never refused a call.

Frank Ressler Weiser (1865-1925) was born on November 10, 1865, at Sunbury, Pennsylvania. He was the son of Dr. George B. Weiser and Susan R. Weiser. His early education was secured in the public schools of Millersburg, Pennsylvania, and the Millersburg High School. He was graduated from the Philadelphia College of Pharmacy in 1888 and from the Jefferson College of Medicine in 1891.

Dr. Weiser practiced medicine for three years in Williamstown, Pennsylvania, from 1891 to 1894. On March 1, 1894, he was united in marriage with Miss Jeanette Schoch, and with his wife came to Windom, Minnesota, the same spring. He was licensed to practice medicine in the state in April, 1894. For thirty-one years he had an active part in the development and progress of his city, ever interested in all things that made for the betterment of the community.

Among his many responsible offices was that of councilor of the State Medical Association for the Second District of Minnesota. He was also a member of the Southwestern Minnesota Medical Society and of the American Medical Association. From January, 1911, to 1917, he was a member of the Minnesota State Board of Medical Examiners, serving as president in 1916. Dr. Weiser was interested in all forms of education; he was a member of the Windom board of education from 1915 to 1921, and served as clerk of the board for the last six years of that period. He was coroner of Cottonwood County several years. In politics he was an active Republican.

Among the most important of the doctor's interests outside of his professional and civic services was faithful and conscientious devotion to the Masonic fraternity. He was very active in the work of all the Masonic bodies in which he held membership, namely, Prudence Lodge No. 97, A. F. and A. M.; Windom Chapter No. 48, Royal Arch Masons; Windom Commandery, No. 39, Knights Templar; 32nd Degree Scottish Rite, Valley, Minneapolis; and Zuhrah Temple, Mystic Shrine. He was chairman of the advisory council of the Windom Chapter of DeMolay, which is sponsored by Masonry. He was also a member of the Royal Arcanum, Woodmen of the World, and the Woodmen Circle.

In early life, Dr. Weiser was baptized and confirmed in the Lutheran Church. In Windom he was affiliated with the Episcopal Church.

For several years toward the end of his life, Dr. Weiser was in poor health. In the autumn of 1924, because of an infection in his right foot, he was taken for examination to the Mayo Clinic at Rochester, where it became evident that amputation of his right leg was necessary in order to save his life. He recovered rapidly from the operation and again was active in his medical practice until early on the morning of May 22, 1925, when he was stricken suddenly with coronary thrombosis and died.

This beloved physician, loyal friend, good neighbor, kind and devoted husband, father and brother was survived by his wife, Jeanette Schoch Weiser; a son, Dr. Conrad Weiser, an Episcopal clergyman; a daughter, Helen, a schoolteacher; and two brothers, Dr. G. B. Weiser, of New Ulm, Minnesota, and William H. Weiser, of Millersburg, Pennsylvania.

NOTES ON MEDICINE IN FREEBORN COUNTY, 1857—1900

ANDREW GULLIXSON, M.D.
Albert Lea, Minnesota

This résumé begins with a modicum of early history of Freeborn County. This was included because the early hopes and aspirations of three of its pioneer doctors were quite intimately related to these beginnings. Again, in order to sense their "coming in and going out," a picture of the *tempora et mores* of 1857 is necessary. How could those gallant men, with no knowledge of the basic sciences of today, and with such limited armamentarium, wrap themselves around the heartstrings of their clientele and become so indispensable? Only one conclusion is evident. They possessed a deep regard for courageous duty and, with that, a profound sense of human understanding.

> *"When our earth came fresh and green and beautiful from a divine hand, the great command was to 'Take it, people it, and subdue it.'"*

By the time people came to redeem that implied pledge, Freeborn County was still green and beautiful, but it had grown rugged and hard to subdue. Thirty beautiful lakes were found, together with a thousand and one marshes and sloughs. About half the county was woodland, intermingled with innumerable small clearings ready and suitable for tilling. The wooded areas were largely of oak; but hard maple, ash, hickory, walnut, butternut, hackberry, and other varieties of trees, brush and berry bush, were also plentiful. Half was prairie land mingled with sloughs and marshlands. But it "promised winter and summer, day and night, seed time and harvest."

And so they came. Town-site operators had sawmills in operation in 1856. In 1857 people came in numbers. Splendid folk came from the East to establish homes and farms. Land speculators and boomers came in numbers to cheat and plunder until satisfied or apprehended, and then moved on to new fields. There was yet no bounty on wolves. The real back-breaking work of permanent settlement and home-building was largely accomplished by the immigrants who came in increasing numbers from 1857 on. Of these the Norwegians came first; then the Irish were the most numerous. Then came the Danes, then the Germans, and last, the Swedes. But Norway and Ireland, though immortalized in history and in song for their scenic grandeur and beauty, were lands where poverty, hunger, regimentation, neglect, and want were familiar companions. That is the reason why these two peoples were the easiest and most quickly to be assimilated into the very soul of their new-found and beloved America. Their early devotion and patriotism is exemplified in the New York Irish Brigade and the Fifteenth Norwegian Wisconsin Regiment in the Civil War.

That is also a reason why these two peoples are expert politicians, as is exemplified here in Minnesota history. But they all came, not only hungry for food, but hungry for freedom in this new land of promise, hungry for homes, hungry for schools for their children and for churches where they could gather in their respective congregations and worship in freedom according to the faiths of their fathers.

The early pioneer immigrants were, for the most part, a pious people. They were hard-working, clear-headed folk, who faced misfortune and dangers with courage, yet were sympathetic and tenderhearted. Their occasional deficiencies in some of the elegancies of social conduct were more than compensated for by their love and regard for humanity. Instances of questionable neighborly conduct would occur between the Norwegians and the Irish on St. Patrick's Day, March 17, and on Norway's Independence Day, May 17. But the next day these same neighbors would be helping each other in the fields. A prominent Norwegian

author described one of these May 17 celebrations, when the Irish lads exchanged compliments with the Norwegians, in essence as follows: The classes were assembled across the street from each other and the text books were the "mingled souls of wheat and corn," freely transferred from glass to lip. The urge finally came to cross the street and throw the Norwegian teacher out of his classroom. The meleé was lively and when a young Norwegian saw the battle going against his countrymen, he jumped down unsheathing his knife with the intention of assisting them in a larger way, but his teacher shouted to him, "Throw down your knife, my boy, we fight like Christian folk here in America."

Prior to March 4, 1855, Freeborn was still a part of Dodge County. On that date, the county limits were designated and the county was named Freeborn in honor of William Freeborn, a pioneer of Goodhue County. In March, 1856, one of the proprietors of Albert Lea townsite attended the territorial council in Saint Paul and succeeded in getting an act passed by which the organization of the county was perfected.

In November, 1856, the first election was held, and the entire voting population turned in forty-four votes. Post offices were established and mail facilities were provided by private enterprise. In March, 1857, the territorial legislature made provision for the county's independent government, and temporary officers were appointed. At the first general election in November, 1857, a full slate of officers was duly elected, with eleven precincts established, casting 664 votes. Dr. A. M. Burnham was elected coroner, but refused to qualify, and this office stood vacant for ten years. Dr. A. C. Wedge was elected to the Board of County Commissioners.

Besides the village of Albert Lea were Itasca, St. Nicholas, Shellrock, and Bancroft, standing as eager and potent contenders for the county seat. Two other villages in those early years (1856, 1857) were Moscow and Freeborn. Later, in 1869, with the coming of the Milwaukee Railroad, there were Hayward and Alden, and finally, in 1874, with the coming of the Minneapolis & St. Louis Railroad, were Emmons, Manchester, and Hartland. The first townsite operator in Albert Lea came in 1855. In 1856 appeared several well-educated, clean-cut, solid businessmen. In 1857, the first doctor, A. C. Wedge, came, as did also a good lawyer. Thus, Albert Lea was established by men of unusual energy and intellectual talents, and all of these men were used courageously and effectively through the guerilla warfare that later centered in the county seat fight. They were men of good character and judgment, steeped in the traditions of the town meetings of New England. They worked together with full cognizance of their responsibilities in building order out of chaos and they were willing and ready helpers to the immigrant pioneers in setting up their local governments. When the squatters' rights under the pre-emption laws were in jeopardy in President Buchanan's term of office, these men furnished an expense account and sent a delegate to Washington to help frustrate the plans of conniving land sharks, who were succeeding in their greedy acquisition of immigrant lands and homes.

The first white man to enter Freeborn County was Col. Albert Miller Lea with a detachment of 180 troops in 1835. An account of his observations reads as follows:

> "We passed through that beautiful region of lakes, open woods, and prairies in which the headwaters of the Blue Earth and Cedar rivers intertwine. We came upon an elevated promontory descending rather abruptly to the most beautiful lake we had ever seen. We stopped an hour at that exquisite spot and took a sketch of the lake."

The first white settler, Ole Guldbrandson, who came in 1853, was a Norwegian who settled in the vicinity of Shellrock. His log cabin of that date now stands

neglected on the county fair grounds. When he saw the smoke from nearby cabins in 1856 or 1857, he moved on. The order of settlement, after the hunter and trapper had passed on and the townsite operators had surveyed and organized for a year, was as follows: first came the businessmen, doctors, lawyers, and immigrant settlers; together with the land sharks, gamblers, and poachers of government timber and lands; and finally, when prospects looked good and business seemed to warrant it, came the railroads. The first railroad, the Milwaukee, came to Albert Lea in 1869, sixteen years after the first settler. Only one trail from the south, via St. Ansgar, Iowa, came to Freeborn County and it continued westward to Blue Earth. To get to Saint Paul it was necessary to walk to St. Ansgar, thence north to Austin, and thence north to, and along, the Mississippi River.

Settlements took over the wooded sections first, where the pioneers erected their log cabins near the many clearings, where the soil was open for the plow and the planter. The prairies were not settled as heavily until after 1869, when the railroad provided transportation for lumber and supplies. Many early prairie pioneers lived in sod houses. The first school house in Alden township was built of sod.

Dr. Frank A. Blackmer, just two months before he died, delivered a lively address before the Society of Territorial Pioneers in May, 1900. He came to Albert Lea with his parents, Dr. and Mrs. Franklin Blackmer, in 1856, and remembered well that when he was a lad of ten years, bread of cracked corn, tea of the dried tender leaves of red root, coffee from dried browned acorns, beets, roasted wheat, and dried and ground corn were the daily fare, and when, during the panic of 1857, men were dressed in the only available clothing, which was made of bed ticking, and looked like convicts. Dr. A. C. Wedge, president of the society, in introducing him said: "During those years our acquaintances were more than ordinary. The hardships made us neighbors, friends, and brothers. We realize now that we builded better than we knew in laying the foundations for a splendid civilization. It is well that the younger generation be reminded of the valuable services that were rendered and how much comfort they now enjoy as a result of our pioneer life."—*Albert Lea Standard,* May 11, 1900. Dr. Blackmer spoke of the Hon. Henry M. Rice who, in 1841, spent the summer here hunting elk, deer, and other game; of the first townsite operator at Albert Lea; of the territorial legislature and the organization of the counties; and particularly of the first county seat contest between Albert Lea and Bancroft. He said:

"Albert Lea won by a majority of 165 votes. This important decision was brought about by the free use of whisky and the free distribution of a few town lots. In a few places women and children voted, and all the immigrants who passed through Albert Lea and Pickerel Lake were induced to stop and vote.

"In 1857 there was a large immigration into Freeborn County, and that fall was the beginning of hard times that lasted until the Civil War created a demand for wheat. Our nearest railroad town was McGregor, Iowa, 140 miles away. Wheat was then worth sixty cents a bushel, and it took ten days to make the trip. Farmers would take a load of wheat and dressed pork to market at McGregor and haul back merchandise for the merchants. Often when weather and roads were bad, the farmers came back in debt, having used up the provisions for expenses. By the spring of 1858 starvation began to stare the people in the face. That year was appropriately called "1800 and Johnny Cake," except that there were dozens of families who had no Johnny Cake. Quite a few lived on leeks, milk, and wild artichokes. Game and fish were plentiful, but few people had money enough to buy shot and powder. Fish seines were drawn regularly below the dam, but there was no salt to prepare fish with. In the air holes in the lake, tons of fish were caught. The boys in Shellrock had no money to play penny-ante with, and so they chipped in with suckers and called with pickerel."

(To be continued in the October issue)

President's Letter

LET'S NOT "LET GEORGE DO IT"

In judging a man, we look not only at what he has—his skills, his wordly goods, the influence he wields—but also at what he is. We look for an intangible something within him—his personality, his soul. Because we cannot readily look into a man's soul and evaluate what we find there, we must rely upon his actions with regard to his family, his fellow citizens, his community, to serve as the index to his inner makeup.

The medical profession today is judged by the public in much the same way. Its individual members are appraised by the people who look to them for service and help, not only according to their proficiency at relieving suffering or diagnosing a pain in the stomach (although it must be said that that factor counts for much), but also for their cordiality, sense of humor, cooperativeness, participation in community life and countless other qualities. The entire profession is being viewed by its public as the sum total of all the doctors which the individual members of the public have met, done business with or heard about. Unfortunately, if a doctor among the lot repeatedly fails to meet with his patients' expectations, his failure tends to detract from the entire profession. This fact has been dwelt upon by many a speaker and writer before, but it is important and bears repeating.

When life in America was less urban, less complex, the family doctor held a remarkably strong position in his community. He participated actively in civic matters, and it can truly be said that his life was dedicated to the people whom he had chosen to serve. In turn, he was repaid by the love and respect of a grateful community. What he lacked in scientific knowledge, he made up in human understanding. The scope of medical science today utterly dwarfs the efforts of medical science a generation ago, but what of our stock of those intangibles that make up the *art* of medicine? Does our command of this art anywhere nearly equal the mastery possessed by our forebears?

An "M.D." is traditionally a symbol of intelligent leadership. Yet many who bear this title exert themselves only where medicine is concerned, to the neglect of civic responsibilities, social service activities and community interest. Admittedly, the practice of medicine is demanding upon time and energy. Likewise, physicians are continually performing services for which they receive inadequate return or no return at all. But these services do not excuse any of us from supporting and contributing to those causes which are sincerely promoted in the interest of the less fortunate. Giving voluntarily to the needy is a practice of a free society. Either we must continue this practice or change it for a system of compulsory taxation to support a government-supervised dole.

We cannot expect the public to support the cause of free medicine if we do not give back to our communities in a measure at least proportionate to what the community has contributed to our well-being. In so doing, we of the medical profession can add materially to our prestige and good will. But there is another, broader consideration which involves the fundamental precepts that underlie our American freedom: to help assure the continuance of our type of free society, the members of all professions are going to have to do something more than just exert their skill as competent technicians or artisans. Above and beyond the daily job, there must be time out for genuine good citizenship. None of us, sensing the civic responsibilities and opportunities which daily confront us in our respective communities, can afford to shrug our shoulders and say, in effect, "Let George do it." If we do, we are being dishonest with ourselves as professional men, because we comprise an all-too-limited segment of the American public which, by training and ability, is able to exert powerful influence for good on behalf of our communities and our country.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

SOCIALIST BORERS

AMERICAN Medicine and the Political Scene, a Washington report published every week or two by Marjorie Shearon, Ph.D., furnishes a keen analysis of legislative activities, particularly those affecting medicine. Her leaflet of August 20 offers further evidence of the socialistic activities among government officials.

It may not be generally understood that the Federal Security Administration, headed by Oscar Ewing, is made up of the Social Security Administrations, the United States Public Health Service, the Office of Education and other miscellaneous units including the Bureau of Research and Statistics. This is a billion dollar concern, and the head of the Federal Security Administration is in a position to exert widespread influence in favor of socialism, if he is so inclined. There is evidence that he has done so.

To quote from the leaflet of August 20:

"The Bureau of Research and Statistics in the Social Security Administration is headed by Falk and Cohen, protected by Altmeyer, and officially approved by Ewing and Truman. There is now ample evidence in the published record and even more ample evidence not yet presented that this particular cell in the Government has for years exerted an influence out of all proportion to its size. Falk and his associates have produced an enormous amount of material designed to sell the Wagner-Murray-Dingell Bills, or something like it, to the people at large, to organized labor and social workers in particular, and to Congress first, last, and always. Altmeyer and Cohen, or their representatives, have preached the Gospel of Geneva, i.e., the Socialist program of the International Labor Organization, up and down this hemisphere and in the capitals of Europe and Asia. This whole campaign for national compulsory social security, including tax-supported medical care, has been paid for by the American taxpayer."

Here we have, then, an administrative department of our federal government, whose officials favor socialism, using tax-supported facilities to influence legislation, absolutely contrary to the Constitution.

What this element in our government has in mind in the way of socialization of our national economy is well illustrated by the Report of the Mission to Japan, in which a social security program for the Japanese is proposed whereby old age survival, invalidity, disability, and unemployment benefits, as well as medical care would be provided which would require as much as a 35.2 per cent payroll deduction. This plan would be the last word in a social security program and would provide little opportunity for a saving program. Add provisions for food, clothing, and shelter and you have a complete socialistic state.

It is high time that we had a house cleaning in Washington, and an elimination of those officials who have been using their influence to bring on a socialistic government. The social security program we have at present has doubtless come to stay. It involves enormous expense as it is, and certainly the addition of medical care would be a step toward complete socialization and eventual adoption of a socialistic state.

The people of the United States have not supported a socialistic political party, and it can be properly assumed they do not favor a socialistic state. It is not incumbent on government officials to use the power of office to change our national form of government.

ADULT HYGIENE AND GERIATRICS

THE INDIANA State Board of Health has developed an aggressive department under the direction of Dr. William F. King, and designated it Adult Hygiene and Geriatrics. Dr. King is chairman of the education committee of the American Geriatric Society. He urges his fellow committee members to develop interest and action in our respective states.

There is little need, presently, to quote for practicing physicians the rising tide of statistics that attest life extension and the preponderance of chronic disorders among our patients. Indiana reports that 50 per cent of current deaths are due to chronic diseases, in contrast to one hundred years ago, when 5 per cent were so listed. More than one-third of Indiana's population is now over for-

ty years of age, when chronic disorders date both to mortality and morbidity. Doctors are most happy, however, in the curing of acute or preventable disorders.

It is implied that medical students, due to the overcrowded curriculum in all schools, do not get enough indoctrination in terms of the problems of the aged which their future practice will provide and display. It is likely that the issues of aging, senescence, degeneration and malignancy are stressed unduly as *disease patterns* (pneumonia, coronary disease, diabetes) and the import of the social, economic, rehabilitation and adjustment factors in geriatric practice are considered on a par with cultural, political and international relations. The young practitioner soon finds out what it means to "become an umpire" instead of a healer for 40 to 60 per cent of his clientele. He gives them direction and guidance; he offers "cancer control" but his percentage of "cures" fades as chronicity obtrudes. Our medical journals of every type have the opportunity to step in where the medical schools leave off. Regional and national societies are encouraged to feature in their programs more papers and discussions dealing with Geriatrics and Gerontology. Two excellent journals now represent these two medical fields. They should be read much more widely.

E. L. Tuohy, M.D.

POLIOMYELITIS IN 1948

AUGUST, as a rule, is the month of greatest incidence of poliomyelitis. Why this variation in season and localities, we do not know.

The epidemic this year promises to be one of the worst, although that in Minnesota is comparatively mild. According to the U. S. Public Health Report of the week ending August 7, 1,239 new cases were reported for the nation at large, a slight increase over the preceding week. The incidence, however, showed a slight decrease in all three of the states where the epidemic has been the worst—in North Carolina from 212 to 179, in California from 224 to 177, and in Texas from 82 to 81. Through August 9, a total of 1,316 cases had been reported in North Carolina, for the most part in the western and central parts of the state.

The total number of cases reported in the nation up to August 7 was 7,039, as compared with 1,937 in 1947 and 5,450 in 1946, as of that date. In 1946, the year in which Minnesota was so hard hit, a total of 8,841 cases had been reported for the nation up to August 17, the final figure for the year being 25,698.

The Minnesota State Department of Health has kindly furnished the following figures for 1948: Minnesota up to and including August 25 has had reported 340 cases—61 from Minneapolis, 17 from Saint Paul, 1 from Duluth, and 261 from the remainder of the state. Freeborn County has reported 56 cases and Faribault County 71. Total deaths reported for the state had been 18.

In 1947, only 201 cases and 13 deaths were reported for the entire state. In 1946, however, cases numbered 2,881 with 226 deaths.

It is to be fervently hoped that the large amount of research now under way will discover a means of preventing the paralyzing action of this virus which is undoubtedly harbored by many carriers.

SOCIALIZED MEDICINE

IN May, Governor Dewey and former Governor Stassen visited Oregon preceding the primary election in that state. During that visit Governor Dewey was asked to address the House of Delegates of the Oregon State Medical Society, which he did as follows:*

"This is a subject . . . with which I have had a rare and unique experience. I had the idea a few years ago that the widespread movement to broaden the base of medical care could be met by government action if the doctors were put in charge. In fact, . . . I thought I would try it out in New York . . . I appointed a commission of nineteen people . . . They hired a research staff and then went to work.

"Finally after . . . eighteen months the research came through . . . I was thoroughly convinced, beyond a shadow of any possible doubt, **that compulsory medical care was unworkable, that it would bankrupt our society and destroy the standard of medical care in our nation, and it would be the greatest catastrophe in the United States.**

". . . I had felt all along that if there was any merit to this thing it . . . should be done on a state level and kept close to the people, and we ought not to use one hundred and forty-five million people as guinea pigs. We ought to use it on a small level and if it failed abandon it . . . We got the Saskatchewan program, the New Zealand program and the Australian program **and it was absolutely clear on the record that every time they tried to compel people to pay a certain sum to government for medical care they destroyed the medical care they were to receive.**

*Quoted from an editorial entitled "Dewey on Socialized Medicine," North Carolina Medical Journal, July, 1948, page 356.

"Compulsory, socialized medicine is no good. It cannot be done. Accordingly, I have spent the last two years knocking down every proposal that anybody has made to regiment the medical profession and the people of America through any program of socialized medicine. By making speeches publicly at every meeting of people that would listen to me on the subject, I have made clear that we have actually been through this thing, this thing which cost the people of my state $200,000 to find out about. I don't want the money wasted. I don't want to run the risk of happening to the health of our people what has happened to the health of every group of people which has tried **to drag the medical profession down to the Socialists' level. You won't drag anything up. You will enlarge the volume of medical care but utterly destroy the quality of medical care the minute you try that process."**

As a result of Dewey's unequivocal stand against compulsory medical care on a national basis, the physicians of Oregon put on a whirlwind campaign in his support. The Oregon physicians also sent letters to other physicians throughout the country urging Dewey's nomination in Philadelphia. The results in Oregon and Philadelphia are now well-known history. The physicians of Oregon apparently were impressed by Dewey's stand and felt uncertain of Stassen's attitude.

Governor Warren, on the other hand, is well known to have just as decided views favoring political medicine and has twice attempted to establish it on a state-wide basis in California. It is to be hoped that, if elected vice president, he will not be able to influence Dewey to change what seems to be his well-considered opinion.

President Truman, on the other hand, has been a strong proponent of the Murray-Wagner-Dingell Bill and has urged its enactment in Congress.

The physicians of Oregon have the feeling that Dewey's impromptu talk before the House of Delegates of the Oregon State Medical Society had much to do with his nomination. Certainly his stand appeals to the profession throughout the country.

INACCURACIES IN BIRTH CERTIFICATES

The need for filing accurate and complete birth certificates as early as possible after the birth of a child is being stressed at present by the Division of Vital Statistics of the Minnesota Department of Health. The division is encountering a great many problems due to inaccuracies in birth certificates and delays in filing.

"Doctors throughout the state are strongly urged to fill in birth certificates accurately and transmit them within five days after a baby's birth to the registrar of the city, village or township where the birth occurred," says Mr. J. W. Brower, acting director of the Division of Vital Statistics. It is essential, he points out, that birth certificates be legible, and that spellings of all names, and dates, be absolutely correct. A birth certificate that has been changed in any particular is not accepted by the courts as *prima facie* evidence, nor is a birth certificate that is filed as long as six months after the birth of the child concerned.

"Failure to file a birth certificate may result in a great deal of inconvenience and trouble for a person in later life, when it becomes necessary for him to present such evidence in order to establish proof of citizenship for employment, military service, a foreign passport, the right to vote or to hold elective office, or proof of age for obtaining life insurance or a pension," Mr. Brower states.

The process of securing delayed birth certificates is complicated, both for the individual concerned and for the Vital Statistics office, because it is often very difficult and sometimes impossible to obtain the evidence that is required by law for the filing of delayed certificates. It is much better if the birth certificate is properly filled in and filed shortly after the birth of the child.

Physicians are further urged to use a permanent type of ink in filling in birth and death certificates and other official documents. Records made with ballpoint pens have a tendency to fade and thus may become valueless.

Vaccination with BCG does not provide complete protection against tuberculosis and, until further controlled studies are conducted, cannot be recommended for the general population. However, since it appears to provide some degree of protection, its use is recommended for members of groups constantly exposed to tuberculosis if they have a negative reaction to the tuberculin test.—ATS Chemotherapy Comm., NTA, Nat. Tuberc. A. Bull., March, 1948.

NATIONAL HEALTH LEGISLATION

(Continued from Page 980)

very freedom and opportunity we are seeking to preserve and expand.

The progress achieved by the slower method of careful study of each problem and cautious and economical experiments preceding major programs may seem slow to those who want Utopia tomorrow, but so far in history all the promises of the leaders who insisted on trying to achieve Utopia in one jump have been redeemed only in the base coin of dictatorship and human slavery.

The United States will achieve far greater and more rapid progress in the field of public health, as in others, if we stick to the principles of freedom through which we have already achieved so much.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

DOCTORS, PHARMACISTS HOLD MEETING AT DULUTH

At the invitation of the Duluth Associated Pharmacists this spring, Duluth physicians were invited to a dinner meeting designed to promote interprofessional good will. The event was a highly successful one and almost immediately desirable results were obtained stemming from the mutual understanding and friendly feelings that were given a substantial boost. There is promise that the compliment will be returned by the physicians. Thus a definite start has been made on the long-advocated program of improving interprofessional relations. This worthy beginning stands as an example to other communities.

An immediate development was an invitation by the St. Louis County Medical Society for the Duluth Associated Pharmacists to join with them in appointing committees to co-operate and exchange ideas on new and varied pharmaceuticals, especially those frequently duplicated.

It is felt by the Duluth professional people that both the doctors and the pharmacists can derive a great deal of benefit from co-operative effort; and through such effort there will develop a better understanding of mutual problems. Ultimately, better service to patients, customers and to the community will result.

Co-operation Long Advocated

For a long time, professional leaders have advocated closer ties between the various groups engaged in serving the public, not only to bolster their positions and their efforts to preserve freedom of enterprise, but to enable them to render better, more effective and more economical service to the people. Members of the health professions outside of medicine, for example, are an important "public" which medicine must include in any consideration of "public relations." In like manner, doctors are an important "public" which the pharmacist, the hospital administrator, the nurse, and the other professionals must consider. But such an enterprise as the Duluth meeting is more than just good public relations; it provides a means for the members of the professions to discover the interdependency of all groups which exists in a democratic society such as ours. It gives doctors a chance to see that pharmacists are concerned about professional relations and public relations just as is the medical profession, that they are as much in need of customer confidence as the doctors are in need of building up confidence on the part of their patients. Minor irritations and major problems can be cleared up co-operatively—everything from the unthinking dispatch by a busy physician of a prescription written unintelligibly to the addition of meaningless names to pharmaceuticals on the part of drug houses. Three definite steps have been advocated for the pharmacists and physicians to take in the interprofessional program begun at Duluth:

1. Physicians should strive to become thoroughly acquainted with the proven value of drugs prescribed; they should keep themselves informed.
2. Pharmacists should make known their problems when they involve the medical profession so that the profession can co-operate in remedying the difficulties.
3. Physicians and druggists should present their problems to drug manufacturers and obtain their co-operation.

With the understanding coming from a definite program such as the one now under way, physicians and pharmacists can join hands for the best possible service to the public.

STEPS TAKEN TO TACKLE MENTAL HEALTH PROBLEM

Under way at present in Minnesota is a definite drive to "do something" about the conditions in this state with regard to the care of the mentally ill. It has been long realized that the treatment for mental patients is more or less inadequate all over the nation, and with the passage of the Mental Health Act by Congress funds will be available to correct the undesirable conditions that exist.

Prior to this time, because of the lack of funds and facilities, it has been impossible to provide salaries attractive to qualified personnel and to render something more than just custodial care for mental patients. Now with the backing not only of a federal appropriation for improvement of services and for public health education, but also of the Governor and a number of influential citizens, it seems that remedial measures will eventually be instituted.

Minnesota's program begins with an annual grant of $59,623 from the federal government under the Mental Health Act. These funds will be administered by the recently created Mental Hygiene Unit of the State Health Department and will finance a statewide program of service and education. In addition, there is strong indication that a program for improved facilities and treatment in Minnesota institutions will be laid before the state legislature in 1949.

The press in this state has carried on a most vigorous campaign to expose the conditions prevailing in Minnesota's institutions. Nevertheless there is some controversy over the exact status of these "conditions." The Governor's committee of citizens appointed to review the treatment of mentally ill in this state reports one set of facts and figures, while the Legislative Research Committee has made a report taking issue with the previous findings. No one disagrees, however, on the major point involved—that Minnesota's mental patients should and can be getting better treatment and care.

Another Study Under Way

Most recently announced is a study to be made by the State Division of Public Institutions to determine what the institutions need in the way of additional personnel, housing facilities and food preparation, the findings to be presented to the 1949 Legislature, which will then be asked to appropriate sufficient funds to meet the needs.

Governor Youngdahl has promised that improvement in mental health will be a Number One project when the Legislature convenes. He has asked specifically for the following:

1. More adequate staffs for the state's seven institutions, with a near doubling of present personnel and with salary scales attractive to workers, doctors and nurses equipped to provide high grade care.
2. A training program for personnel, including a psychiatric training institute.
3. Better food for patients and better clothing and therapy equipment.
4. Appropriations to cover increased building costs since the original construction program was laid out.
5. Mental Health Clinics in local communities.

There is also talk of recommending that a new institution be erected, probably at Alexandria to take the burden off the other institutions in the state. An addition of 150 beds for senile patients at Moose Lake state hospital was recently authorized and the contract has already been awarded.

ANTIVIVISECTION CITED AS THREAT TO MEDICINE, LIFE

Although it used to be a harmless cult, the antivivisection movement has become a menace to medicine and to human life. So states a recent article in the *Saturday Evening Post* (July 24). With facts and figures to back up this contention, the author, Dr. Virgil H. Moon (professor emeritus of pathology, Jefferson Medical college) and his collaborator, David G. Wittels, show how what used to be a harmless belief held by some that it is morally wrong to experiment on living animals has been turned by clever opportunists into a racket.

The antivivisectionists are not to be confused with the true humanitarians who seek to protect animals from mistreatment and cruelty. The antivivisectionist puts animals above humans—at least, the only alternative to performing experiments on animals which the antivivisectionists offer is that of making human guinea pigs out of charity patients! This cult actually went so far, according

to Dr. Moon, as to send congratulations to Adolph Hitler when he outlawed animal experimentation in Germany in 1933. It is common knowledge now how the Nazis carried out their cruel and vicious tests on living persons.

Without experimenting on animals to determine the effects of drugs or to observe the behavior of living tissue in the presence of cancer, leukemia and other maladies, medical research must needs come to a halt. Hence, as the title of the *Post* article points out, these cultists are "Trifling with Your Life!" Such discoveries as penicillin, sulfas and streptomycin had to be tried first on animals before they could be administered to human sufferers from pneumonia and tuberculosis. Countless lives have been saved by drugs perfected with the aid of our animal friends, with this research being conducted by responsible persons who keep the distress of the animal to the minimum. But the antivivisectionists maintain it is morally wrong to save the life of a dying person and interfere with divine authority which had marked him for death.

Seek to Disparage Medicine

The antivivisectionists seek in other ways and by other false teachings to disparage the work of medical science.

They claim, for example, that the germ theory of disease is false; that cancer, tuberculosis and heart fund drives are carried on simply to collect money for animal experimentation; that parents should forbid vaccination or inoculation of children because materials used are merely frauds; that government reports on the fight against disease are written by physicians who are merely trying to build up their prestige; that rabies is not transmitted by dogs and the contention that dogs are responsible is a deliberate attempt by health departments to "scare" the people. Antivivisectionists also claim carrot juice is effective against cancer and that vaccination causes syphilis. Such teachings, up to now, the medical profession thought to be such utter nonsense that it could safely be ignored, merely laughed off or stifled by pointing out the facts about the lives saved through products discovered and tested through animal experimentation.

Not so, however. These "crackpots" have sold their ideas to politicians and to professional promoters. Their twisted beliefs are percolating into legislative halls and are being passed along to people in public life who are respected or idolized by millions—for example, motion picture actors and newspaper publishers. Funds with which to propagandize and high-pressure the public into swallowing their false doctrines continue to pour in.

Medicine Must Act

The need for medicine to counteract this movement is obvious. It is hoped that the article on antivivisection will be read by a large number of doctors and other thinking persons for the facts speak for themselves. Legislators should be warned to be on guard against these false doctrines, for the health of the people is at stake.

It can be pointed out that the appeal of the antivivisectionists is irrational. It can be shown that although this group forbids inoculating rabbits with polio virus, for example, it does nothing to decry the trapping of mink to make expensive fur coats.

Nor does the antivivisectionist look with disapproval on the clipping of a dog's tail, the branding of cattle or the spaying of a female puppy. These are classified as "operations deemed necessary by the animal owner" and are considered proper. No one should deny the existence of sincere sympathy for animals suffering needlessly; what must be combated is the commercializing of this sympathy into a vicious and unfounded attack on the humanitarian principles of curative and preventive medicine.

VETERANS ADMINISTRATION TRAINS OWN PHYSICIANS

A program for training medical graduates in Veterans Administration Hospitals throughout the nation, authorized by the Eightieth Congress, seems likely to be carried through in Minnesota.

The VA's current residency-training program, carried on in co-operation with the University of Minnesota, has been highly successful and has generally improved the quality of care rendered to hospitalized veterans in Minnesota.

Present plans are to expand this program and offer "two or more" internships to medical graduates from the University of Minnesota and also to some graduates from other schools.

It is planned to begin the first internships about June or July of next year. The interns will get one-year tours of duty and will be paid a maximum of $1,800 a year.

Minneapolis Surgical Society

Meeting of April 1, 1948

Dr. L. Haynes Fowler, Presiding

CARCINOMA OF THE BREAST

An Analysis of 100 Questionnaires Sent to Patients Operated Upon at Fairview Hospital

L. A. STELTER, M.D.
Minneapolis, Minnesota

Although interest in carcinoma of the breast has been dominant for fifty years, there never has been a period of more controversy concerning the diagnosis and treatment than the present decade. Medical libraries are full of literature on tumors of the breast, and whole books have been written with as many as eight and ten chapters devoted to cancer alone.

During the past year 175,000 persons lost their lives from cancer, and approximately one-tenth of these deaths were from breast cancers. There are five times as many radical operations performed for cancer of the breast as for tumors of the entire gastrointestinal tract despite the fact that gastrointestinal cancers are three times as common.

Pack and Livingston state that the reason for this unusual attention to breast tumors is the accessibility of the mammary glands and their functional, sexual, esthetic, and psychological significance. Yet we, as a profession, are still failing to reduce the annual death rate from cancer of the breast.

With the passage of the National Cancer Institute Act in 1937 and the increased lay interest through donations and contributions, this country has established a basis for more comprehensive work on the problem of cancer, its detection and prevention.

Since the etiology of cancer is such a widely disputed and unsettled question, this paper, for want of time, will not discuss these theories.

Pathological classifications of breast cancer frequently employed are as follows:

1. *Steinthal classification.*—A clinical estimation of the stage or extent of the disease at the time of treatment—a classification as to stage.

2. *The pathological classification* as to the stage of cancer.—Determination of the extent of metastatic spread by microscopic examination of the excised axillary nodes.

3. *Broder's classification.*—A study of the anaplasia or degree of malignancy of the cells which constitute the tumor—a classification as to grade, namely, Grades I, II, III, and IV, which represent an ascending scale of anaplasia of the component cells of the tumor. Grade I and Grade II signify cancer composed in a large part of adult and well-differentiated cells. These tumors are slow growing and less invasive. They are relatively radioresistant. Approximately 85 per cent of breast cancers fall within Broder's Grade III and Grade IV classification. These, theoretically at least, should prove radiosensitive.

4. *The clinico-pathological classification.*—(1) scirrhous carcinoma, (2) inflammatory carcinoma, (3) anaplastic carcinoma, (4) cystadenocarcinoma, (5) bulky carcinoma, (6) gelatinous carcinoma, (7) sweat gland cancer, (8) acinar cancer.

5. *The Lee clinical index of malignancy.*—A method for estimating the prognosis in individual cases, taking into account the above factors and additional clinical features noted.

The percentage of malignancies of the breast is closely related to the full maturity of the gland; and the age incidence, based on hospital records, is from forty to forty-nine years. Taylor has estimated that 73.5 per cent of mammary cancers occur in women past the age of forty years. There are many diagnostic signs of breast cancers, of which pain, nipple discharge, lump, retraction of the nipple, puckering of the skin, and palpable lymph glands are outstanding. Pain usually indicates a benign lesion, and a bloody or serous fluid discharge is only suggestive. Any single lump in a woman's breast during the age incidence of cancer should be considered cancerous until proven otherwise. Punch biopsies and x-ray photography are impractical. The only accurate means of diagnosis is excision and biopsy. We must teach our colleagues to be radical, with early excision of solitary lumps and examination by the microscope.

Our largest problem in cancer prevention is lay education. Perhaps such lay information as that printed in the *Readers Digest* of August, 1947, may stimulate women to submit to early examination.

The work of Dr. Augusta Webster, director of the Cancer Detection Clinic at Women and Children's Hospital, Chicago, and that of Dr. Leonard B. Goldman at the Queens General Hospital, New York, exemplify the progress in cancer detection work.

Recently more than 500 physicians gathered at Louisville, Kentucky, for a unique symposium on cancer problems and for the dedication of the world's first x-ray mobile unit for cancer detection. Keynote of the symposium was: "the best cancer clinic in the world should be in the office of the private physician." It is up to him to detect cancer early and help eliminate the disease (Table I).

According to Harrington, factors which influence results of surgical treatment are (1) the extent of the malignant involvement at the time of operation, (2) the thoroughness with which the operation is performed,

TABLE I. TREATMENT RESULTS

Taken from Dr. Frank E. Adair's reports, *Annals of Surgery,* (Jan.-June) 1932

Treatment	Number	Died of Other Disease	Basis of Calculations	Number Living	Per Cent Living	Died of Cancer	Per Cent Died of Cancer	Living With Disease	Per Cent	Living Without Disease	Per Cent
Surgery alone	23	3	20	2	10	18	90	0	0	2	10
Irradiation alone	37	4	34	12	36.3	21	63.3	4	12.1	8	24.2
Combined Surgery and Irradiation	137	9	128	52	40.8	85	66.4	3	2.3	49	38.2

TABLE II. SURVIVAL RATES FOR DIFFERENT PERIODS AFTER OPERATION

Taken from Dr. S. W. Harrington's statistics reported in the *Pennsylvania Medical Journal,* (Jan.) 1940

	3 Years		5 Years		10 Years		15 Years		20 Years	
Axillary Metastases	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival
Present	2987	42.0	2743	28.1	2110	15.5	1385	10.3	726	6.6
Absent	1729	83.1	1522	73.1	1109	54.5	752	41.9	410	34.9
Total	4716	57.1	4265	44.2	3219	28.9	2137	21.4	1136	16.8

(3) the degree of malignancy as shown by microscopic examination of the primary lesion, (4) the prevalence of other associated conditions such as pregnancy, (5) the general constitutional diseases, and (6) the age of the patient.

About 40 per cent of the breast cancers at the Mayo Clinic did not have metastases in the axilla at the time of operation. The proportion of this group living three years or more after operation was 85 per cent, or almost twice as many as in the group with axillary metastases, where the percentage living was 45.3. In the five, ten, fifteen, and twenty-year survival ratios of patients without axillary metastases, it was found that the improvement increased progressively over the group with metastases (Table II). The prognosis, then, is directly proportional to the size of the primary tumor, the metastases, and the grade of malignancy.

The operability of the patient must be determined first before operation is performed. If axillary involvement is present, x-rays of the lungs and the spine must be taken. The operative procedure is important. Since the introduction of radical surgery by Halsted, the method most widely accepted by the profession, the incidence of cure has been greatly increased. It is based on the theory that cancer spreads through the lymph stream; and the greater the extent of dissection, the better chance there is for cure. If these concepts are true, the most important considerations in treatment are early recognition and immediate, complete removal of the diseased tissues. If the condition is confined to the breast alone, a complete eradication of the disease can be expected.

Dr. McNealy, speaking before the Alumni Association of the Cook County Hospital interns and residents in November, 1947, stated that "a breast with a single solitary lump one centimeter in diameter removed by simple mastectomy would cure the patient." Tumors that have axillary metastases are too far advanced to cure as they already have spread beyond the accessable tissue for excision. He condemned excision of solitary lumps and then closing the wound and waiting for microscopic examination. A planned attack is therefore essential: hospitalize the patient, be prepared to do a mastectomy—simple or radical—excise the lump, and have it examined immediately. One should never remove a lump without having a competent pathologist at hand.

With modern preoperative and postoperative care and the use of intravenous fluids, glucose, normal saline, plasma, and blood, haste is not essential in performing this important operation. Haagensen, in the symposium on cancer of the breast, January, 1946, gives a masterful description of the radical mastectomy. He emphasizes that the procedure takes five hours or more and warns that the operator must be prepared to prevent shock. He evaluates the principles of both Halsted and Willy Meyer, namely:

1. The excision of the skin over the whole breast, covering the defect with graft.
2. Excision of both pectoral muscles.
3. Complete axillary dissection.
4. Removal of excised tissue in one block.

The aim of postoperative irradiation is twofold: (1) to attempt destruction of cancer cells left by incomplete operations, and (2) to control recurrences. From the statistics shown in Table III, it is evident that there is little encouragement from its use except for the salving of our conscience and the moral responsibility to our patients to use all possible measures to obtain a cure.

Until newer techniques and procedures pass the test of reducing the mortality, we should use the combined tools of radical mastectomy and postoperative irradiation.

One hundred questionnaires were sent from the record department of Fairview Hospital to patients operated upon for carcinoma of the breast during the period from

TABLE III. SURVIVAL RATES FOR DIFFERENT YEARS FOLLOWING RADICAL AMPUTATION AND IRRADIATION
Taken from Dr. S. W. Harrington's statistics

	3 Years		5 Years		10 Years		15 Years		20 Years	
	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival	Patients Traced	Per Cent Survival
Group with axillary metastases:										
With irradiation	2240	43.2	2011	29.4	1457	16.1	821	9.9	228	6.1
Without irradiation	747	38.6	732	24.3	653	14.1	564	10.8	499	6.8
Group without axillary metastases:										
With irradiation	1014	84.4	858	75.4	588	55.1	354	40.1	100	36.0
Without irradiation	715	81.1	664	70.2	521	53.7	398	43.5	310	34.0

1935 to 1946 inclusive. The purpose of this work was to stimulate interest among the members of the staff in follow-up work and to determine what our records might reveal on carcinoma of the breast.

No attempt was made to grade the cases, as illness in our pathology department necessitated the work of several different pathologists. However, the cases were all diagnosed as cancer in the clinicopathological classification—scirrhous carcinoma, adenocarcinoma, medullary carcinoma, et cetera.

The questionnaire sent to the patients was similar to that used at St. Mary's Hospital, Duluth, and was as follows:

Case No.....

was a patient in Fairview Hospital in .....

The final results of this case are a matter of great interest to the Medical Profession and this Hospital in order to classify its records. Will you kindly answer the following questions and mail your reply in the enclosed stamped envelope?

Have you been in good health since leaving the hospital?

What is your present condition of health?

Have you had any treatment since leaving the hospital? If so, what has been the nature of this treatment?

When did you last see a physician?

Name of physician last seen:

Remarks:

A period of three months was allowed for the return answers, at which time we had sixty-six answers. Of the sixty-six patients, thirty-seven were living and well, and twenty-nine had died. These cases cover the work of eleven different operators. It was noted in analyzing the cases that in those cases in which radical procedures were performed followed by irradiation therapy, the results were more encouraging.

The percentage living, as determined by these questionnaires (Table IV), is not the percentage of cures for the period given in comparison to the number of patients operated upon, but it is a percentage of those who answered the questionnaire.

TABLE IV. A REPORT OF 100 QUESTIONNAIRES SENT TO PATIENTS OPERATED AT FAIRVIEW HOSPITAL

Year	Period	Number of Answers	Number Living	Number Dead	Percentage Living
1935	12 year	4	3	1	75%
1936	11 year	2	2	0	100%
1937	10 year	1	0	1	0%
1938	9 year	3	1	2	33%
1939	8 year	2	1	1	50%
1940	7 year	2	1	1	50%
1941	6 year	15	4	11	26%
1942	5 year	3	2	1	67%
1943	4 year	9	4	5	44%
1944	3 year	12	8	4	67%
1945	2 year	11	9	2	82%
1946	1 year	2	2	0	100%

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(For references, see Page 1043)

Discussion

Dr. N. K. Jensen: When I took my board examinations, I was examined by two nationally prominent surgeons in the oral part of the examination. Their first question was, "What would you do for a carcinoma of the breast?" I replied that I would do a radical mastectomy with axillary dissection. The next question was, would I follow up with x-ray irradiation? I was in the room another half hour without answering the second question because the two examiners got into an argument about whether or not to use irradiation.

It has never been adequately demonstrated by any statistically sound figures that postoperative irradiation is worth the physical trauma of the irradiation, the postroentgen illness and the resultant increased fibrosis. I am wondering if I am misreading the statistics, and I should like to know what others of this society believe.

Dr. Horace Scott: I should like to second Dr. Jensen's remarks. I have been wondering about the value of x-ray therapy. I should also like to raise a question to Dr. Stelter about another form of therapy which he did not mention, that of castration of a young woman before menopause. Might it be of value in the treatment of these individuals below forty-five years of age?

Dr. Robert Tenner: Dr. Stelter's paper represents a good deal of worthwhile work and study, and certainly is a good project for many of our other hospital staffs to follow. I wonder about the advisability of excising so much skin, thereby necessitating skin grafting, as mentioned in the paper. In most clinics and hospitals this is not the usual procedure. I have been under the impression that the recurrences in the scar which are sometimes seen do not represent islands of tumor which have been left in the skin but rather recurrence from the underlying structures or implants spread around at the time of operation. I would like Dr. Stelter to enlighten us on this question.

Dr. S. Maxeiner: I think that in the treatment of cancer one must not lose track of the fact that we have two problems: one is curative and the other is palliative. Some may say that it is not worth while to remove a

carcinoma of the breast, but who wants to live with one? I have made it a rule to take them off, almost regardless of what they look like. I operated upon a patient with a cancer as big as the palm of my hand and large axillary lymph nodes, and she lived five years, during which time her six daughters grew into young womanhood. It certainly was worth while. It was not curative but palliative. If one can provide the patient with six to twelve months of freedom from an odorous, sloughing mass, it certainly is worth while. One recent patient, who was unable to live in the home with her own child because of the stench, was completely relieved and able to be with her family to the time of her death.

Finsterer of Germany says that if the primary lesion is resectable, he must remove that lesion in spite of metastases elsewhere. Life is more comfortable without it than with it. We had one man who had had a carcinoma of the stomach removed, who was collecting insurance. They stopped his insurance because he was feeling so well. However, metastases to the liver finally got him.

We use x-ray routinely on patients with metastases. We have seen metastases in the skin and cervical nodes, which you could feel with your finger, grow while they were getting x-ray treatment, but I do think that some of them are responsive to treatment.

Someone asked about sterilization. We have tried it in several instances but have seen no demonstrable benefit. These, however, have been in patients with fulminating carcinoma. We are extremely radical with skin removal, and I suppose that 70 to 75 per cent are grafted at the time of the removal of the breast.

Dr. Albert Cottam: I have a very distinct recollection of an article by Dean Lewis published in the *Annals of Surgery* in which he analyzed the patients who had been operated upon for breast cancer without skin removal. Fifty-one had showed recurrences in the skin. I have a personal case which happens to concern my own sister, eighty years old, living in Cape Town, South Africa, who noted a lump in her breast. Unfortunately, she wrote to a newspaper doctor who replied that it was probably benign. It continued to grow, and she put herself in the hands of a group of doctors who performed a radical excision followed by x-ray. She wanted me to write to her doctors and find out what was done. I wrote them asking that she be told the truth. It sounded like a malignancy to me, and the fact that they were using x-ray therapy seemed to me that they must have found a malignancy. Her husband was Dr. George Heberden, the fifth doctor in line from the doctor who made notable contributions about the time of the American Revolution. You have heard of Heberden's nodes. He also did pioneer writing on arthritis deformans and angina pectoris.

Dr. Herbert Peterson: The question in my mind always has been whether or not the treatment of breast carcinoma is ever curative, rather than just palliative. The fact that we refer to one-year or twenty-year cures is evidence that there is doubt in our minds as to actually curing a patient with either surgical or roentgenological therapy, or both. It has always been my opinion that we should give the patient every consideration, every "break," and that in no way should any form of treatment be omitted if we can prolong life with some degree of comfort.

Dr. L. H. Fowler: This discussion brings to mind two patients, neither of whom had any x-ray therapy. One patient, a lady now over seventy years of age, is in the hospital at the present time with cardiac decompensation and hypochromic anemia. Dr. W. A. Hanson and I performed a radical mastectomy upon her for a large carcinoma (4 by 4 inches) with skin attachment, eighteen years ago. No evidence of recurrence can be found except periodic bouts of anemia. The second case is that of a woman upon whom I assisted Dr. E. Starr Judd perform a radical mastectomy in 1921 or 1922 for a large adenocarcinoma of the breast with axillary metastases. After nineteen years of good health, she developed a malignant lesion of the ribs and spine and subsequently died therefrom. The interesting question here is whether this patient developed a metastatic recurrence of the original cancer nineteen years later, or were these lesions metastases from a new growth? No local recurrence was present in the breast area. No other primary lesion could be found. Unfortunately no autopsy was obtained.

Dr. Stelter: In answer to Dr. Jensen's question regarding x-ray therapy, I should like to say that Broder's Grades 1 and 2a re x-ray resistant, Grades 3 and 4 are radiosensitive. When you take a group of cases, it does not seem to do a great deal of good. I think we should give the patient all the treatment we can. In answer to Dr. Scott's question of castration of these younger women, I have not enough information or experience on this procedure. I have read about using testosterone on cancer of the breast with metastasis. The article reports two cases of malignancy of the breast in which testosterone gave relief when there was bone involvement. The article appeared in the *Medical Clinics of North America*, January, 1948.

As far as the skin excision is concerned, I have not been as radical in removing the skin over the breast and grafting later. I heartily agree with Dr. Maxeiner that the more radical we are, the better chance the patient has. What woman cares to live if she has an ulcerating breast? Take it off, and everyone is happier.

I just want to emphasize one thing more: early excision and biopsy of the lump. Too many practitioners see small tumors and suggest coming back next month, by which time it may be a far-advanced cancer.

A RARE COMPLICATION OF INTESTINAL INTUBATION

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Since 1938 the technique of intestinal intubation for decompressing by suction distended loops of small and/or large intestine has been developed and has gained wide acceptance. The unwieldy double-lumen Johnson tube was quickly replaced by the Miller-Abbott tube; more recently this is being replaced by the Harris, the Cantor, and the Honor tubes. Actually all of these more complicated tubes are merely refinements over Levin's simple naso-duodenal catheter and, as such, require precise care to achieve maximum effectiveness and to avoid serious complications.

Although the advantages of the nonoperative management of intestinal distention are beyond question, intestinal intubation, used injudiciously, can lead to serious and even fatal complications. It is not the role of this communication to discuss indications for the use of the Miller-Abbott tube, the technique of intubation, or the management of the intubated patient, but rather to recall some of the more common complications which have attended the use of the Miller-Abbott tube, particularly in children; to describe the case of a nine-year-old boy

in whom a rare complication of intestinal intubation was encountered; and to discuss, briefly, the merits of the Honor tube as an aid in avoiding such a serious complication.

Complications

In the nasopharynx, all who have used the tube are familiar with the "plugged nose" secondary to edema of the turbinates. This is particularly likely to occur in children, in whom the nasal airway is so nearly equal to the outside diameter of the tube. Minor epistaxis and pharyngitis, secondary to mechanical excoriation of the nasopharyngeal mucosa by the tube, are not uncommon. The most serious complications in the nasopharynx, secondary to employing the tube, include an occasional sinusitis, eustachian salpingitis and acute otitis media. These last two complications are especially prevalent in children, in whom the local developmental anatomy leaves the Eustachian tube mechanically receptive to retrograde secretions with ensuing infections.

In the larynx, Kaufman et al[6] have experienced such a degree of acute edema that tracheotomy had to be resorted to. Iglauer and Molt[5] have reported necrosis and permanent damage to the larynx as sequellae of prolonged intubation with laryngeal edema. Wangensteen[10] has commented upon damage to the arytenoid cartilages following prolonged intubation.

In the esophagus, the mucosa is well known for its thinness and friability; this is even more true in infants and children than in adults. It is extremely common to find severe erosion of the esophagus in the pediatric age group in whom intestinal intubation has been pursued over even a brief period of time. Vinson[8] has reported late esophageal stricture formation secondary to prolonged indwelling of the intestinal tube.

In the stomach, the problems of intestinal intubation in children are the same as those in adults. The difficulty of getting the tube past the pylorus and the great inclination of the tube to coil in the stomach are familiar problems. Occasionally knots have become tied in the tubing as it coils in the stomach or as it improperly prolapses into the duodenum. Mahon[7] has reported erosion of gastric mucosa with perforation and peritonitis secondary to intestinal intubation.

In the small intestine, secretions do accumulate in the loops proximal to the sucking tip, as is well illustrated in the case reported here in detail. Berger and Achs[2] have had the metal tip of the Miller-Abbott tube become fixed at the level of an extrinsic fibrous adhesion; subsequently the tip of the tube perforated the small intestine and peritonitis ensued. In 1940 Walker[9] reported on an experience in which the Miller-Abbott tube was advanced to the level of a small bowel obstruction to facilitate x-ray diagnosis; the barium inadvertently was introduced into the balloon which, fortunately, ruptured as it was withdrawn through the cardia of the stomach. It is an extremely common experience for those who employ the Miller-Abbott tube to any extent to have the lumen become occluded with intestinal contents. While still using a double lumen tube, Harris[3] reported an instance of intussusception accompanying an overdistended balloon. Several surgeons have encountered retrograde intussusceptions from the too rapid withdrawal of the Miller-Abbott tube, both with the balloon inflated and deflated.

The mechanical problems to which Miller-Abbott tubes are prone are common property to their use in all age groups. Leaking tubing, unusually flexible old tubing, leaking or ruptured balloons, leaking or transposed adapters—these complications are inherent in this kind of precision equipment.

Case Report

The following case report is presented to illustrate another type of complication resulting from intestinal intubation with the Miller-Abbott tube:

W. A., a nine-year-old white boy, was admitted on March 30, 1947, to the hospital service of Drs. Richdorf and Gibbs because of an eleven-day illness characterized by cough and abdominal pain. For the first two days of his sickness he had frequent chills, a coffee-colored sputum and a continuous high fever; his abdominal pain was generalized and not too prominent. For the four days just prior to entry he had had increasingly sévere abdominal pain with continuous vomiting. There had been a few loose stools on the two days before hospitalization.

Physical examination on admission revealed a temperature of 101.6° F., a pulse of 156 and respiration of 40 per minute. The blood pressure was 122 systolic and 80 diastolic in millimeters of mercury. The boy was extremely toxic and markedly dehydrated. There were râles over only the right upper and middle chest. The abdomen was distended, rigid, tender and with some intestinal patterning. Auscultation disclosed high-pitched, frequent borborygmi. Rectal examination revealed a tender mass 10 centimeters in diameter, filling the right pelvis and extending across the midline.

A roentgenogram of the chest on entry showed an increased density over the right upper and middle lobes. Abdominal films showed marked small bowel distention with fluid levels and no gas in the large bowel (Fig. 1).

The white blood count was 13,350, 80 per cent being polymorphonuclear leukocytes, most of which were toxic forms. The red blood cell count was 3,800,000, and hemoglobin 79 per cent. The urine specific gravity was 1.031, showed acetone and the sediment was normal.

For the first nine hours in the hospital, efforts were directed towards combatting (1) dehydration and acidosis with intravenous fluids, (2) right upper and middle lobe pneumonia with penicillin and later sulfadiazene, (3) peritonitis and small bowel obstruction with penicillin and streptomycin, high concentration oxygen and nasoduodenal suction. In spite of these efforts, abdominal distention clinically and dilatation of loops of small intestine radiologically were progressive (Fig. 2). Operation was decided upon.

Under pentothal and curare anesthesia supplemented with nitrous oxide and oxygen, the adbdomen was opened through a right rectus incision. Many loops of small bowel, averaging 6 centimeters in diameter, prolapsed into the field. A ruptured appendix with the tip blown off, and with copious amounts of foul-smelling creamy pus, was disclosed in the right gutter and pelvis. The remains of the appendix were removed. Many loops of darkish, moderately compromised small bowel were freed from their dense fibrinous adhesions about the mass in the pelvis. Collapsed loops of distal bowel immediately enlarged. A Miller-Abbott tube which had been placed in the stomach just before operation was milked manually through the duodenum into the upper jejunum. The closure was accomplished after the viability of all loops of bowel had been established.



Fig. 1. X-ray of chest and abdomen taken on entry to hospital, showing increased density over the right upper lung field and marked small bowel distention with fluid levels.



Fig. 2. Repeat x-ray of abdomen taken nine hours after entry to hospital, showing progressive dilatation of small bowel.

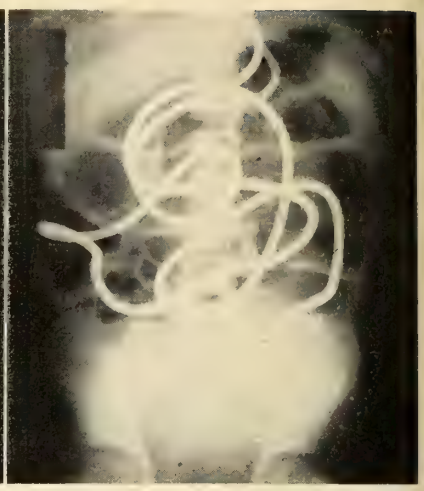


Fig. 3. X-ray of abdomen taken eighteen days after the initial operation, showing recurrent dilated loops of small bowel in spite of the adequate positioning of the Miller-Abbott tube.



Fig. 4. Photograph of distended Miller-Abbott balloon, 12.4 cm. in diameter, full of coagulated Varco's solution as firm as cement.

Postoperatively this boy's temperature rose to 104.2° F his pulse ranged from 110 to 150, and respirations were from 34 to 48 per minute. Penicillin, streptomycin, sulfadiazene, Miller-Abbott tube with Wangensteen suction, parenteral feedings and high concentration oxygen resulted in a definite improvement by the third postoperative day. By this time the Miller-Abbott tube had been satisfactorily advanced to the six-foot mark and its position was checked by x-ray. Although some flatus was passed by rectum and fluids were being taken by mouth, the abdominal distention persisted and the abdomen remained extremely quiet. By the fourth postoperative day the Miller-Abbott tube could be clamped off for two hours, but "gas pains" were too severe to justify the removal of the tube. At this time Varco's highly nutritious fluid was started orally, 30 c.c. every three hours. By the seventh postoperative day the boy was taking 75 c.c. of Varco's solution every three hours and was maintaining his proteins largely by the oral route. On this day he had his first soft bowel movement. Nevertheless, when his tube was clamped off for more than two hours, the patient had such severe pains he would scream to have the tube reattached to suction.

On his twelfth postoperative day, ten days after the administration of pooled plasma and three days after the discontinuance of sulfadiazene therapy, the boy became icteric. His temperature went up from normal to 101.6° F., and his pulse rose from 80 to 130. The abdomen was still distended. Bowel sounds were normal in pitch and frequency. The liver edge was down three finger breadths and was tender. The Miller-Abbott tube was still at the six-foot mark and irrigated well. An x-ray of the abdomen outlined a mass in the left lower abdomen and pelvis where the patient had maximal tenderness. By fluoroscopy both diaphragms moved freely on deep respiration.

The next day his jaundice had increased. A rough, systolic heart murmur, not heard before, became audible at the apex. On this day the tube irrigated less well than previously, although the balloon could be deflated and inflated with ease. By the sixteenth postoperative day his recurrent distention was severe. Upon repeated x-ray study there was again considerable gaseous distention of multiple loops of small bowel. Nasoduodenal suction was put down in addition to the Miller-Abbott tube, and high concentration oxygen therapy was reinstituted. The following day the small bowel was fairly markedly deflated and the stomach was emptied with the second tube positioned in the duodenum. The jaundice had begun to lessen. The rough heart murmur persisted. The pulse, nevertheless, was rapid, and the boy appeared desperately ill.

By the eighteenth postoperative day his distention had recurred. X-rays showed again increased dilatation of the loops of small bowel (Fig. 3). The larger lumen of the Miller-Abbott tube mechanically was sucking out well, but the balloon could not be inflated or deflated. Upon noting this an effort was made to withdraw the Miller-Abbott tube. This occasioned great pain in the left lower quadrant, and the tube could not be withdrawn. A second operation was immediately carried out.

Through a left rectus incision the abdomen was opened. Nearly all loops of small and large bowel were matted together with fibrinous and fibrous adhesions. The Miller-Abbott tube had failed to decompress the dilated loops of small bowel through which it passed. In the process of freeing the adhesions obstructing loops of small intestine at the brim of the pelvis, a gangrenous loop of

terminal ileum was broken open and a large Miller-Abbott balloon, nearly 13 cm. in diameter, full of coagulaten Varco's solution as firm as cement, was delivered into the field (Fig. 4). The tube, together with its balloon, was amputated *in situ*. The nonviable segment of ileum was resected and an end-to-end anastomosis was performed.

Postoperatively the boy developed a hypertension of 175 over 130. His temperature ranged from 101 to 102.5° F. His pulse remained about 150. Twenty-four hours after his second operation he began to expel flatus satisfactorily. His newly inserted Miller-Abbott tube worked nicely. Thirty-six hours after the operation his jaundice became intense. Four short-lasting right-sided convulsions followed. Forty-eight hours after operation his seizures became more frequent, longer lasting and more severe. Unconsciousness followed, and he died on his third postoperative day.

Discussion

It is not within our province to say that this boy would have recovered had he not had the development of this rare and unfortunate complication dependent on the administrative care of his Miller-Abbott tube. All one can say is that equipment in which adapters can be so readily transposed, mislabelled or mishandled is subject to improvement. In 1947 Honor[4] reported his experiences with a newly designed double lumen tube, the merits of which seem worthy of presentation here.

The Honor tube is made of a plastic, Geon polyvinyl chloride, impregnated with a nontoxic radiopaque material. The larger lumen for suction has a bore equivalent to large-sized French catheters (Nos. 12-14-16-18). The wall is slightly thinner than that of the Miller-Abbott tubing. The smaller lumen connected to the balloon just admits a No. 18 or 19 needle. The two tubes are extruded at once from a single die, giving the double lumen tubing a smooth contour. The arrangement of the metal adapters is conducive to simple interpretation, as well as simple care (Fig. 5).

This tube fulfills all the requirements originally set down by Abbott and Johnson[1]: there are two lumens, one for aspiration of intestinal contents and the other to introduce air or mercury into the balloon; it is moderately flexible but doesn't kink or collapse on suction; it is nontoxic and radiopaque. In addition, it withstands boiling without rapid deterioration; it is relatively inexpensive, and intestinal odors can be removed by washing.

Although to date our experience with the small-sized Honor tube in infants and children is a small one, we are eminently satisfied with its performance. Repetitions of the rare complication of intestinal intubation described above have not occurred and seem unlikely to occur with this arrangement of adapters and the size of the smaller lumen.

Summary

A recapitulation is made of some of the more common complications which have been encountered in the use of the Miller-Abbott tube, especially in children.

The case of a rare and serious complication following intestinal intubation in a nine-year-old boy is presented.

The merits of the Honor tube are discussed as a means of avoiding such a serious complication.

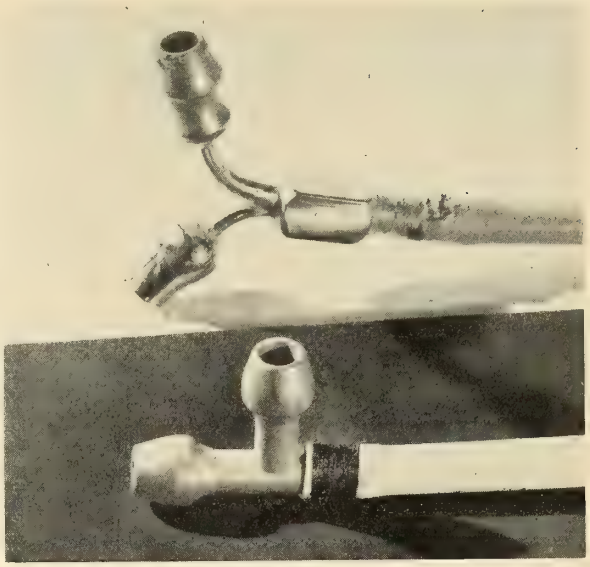


Fig. 5. Photographs of the flanged ends of the Miller-Abbott tube *(above)* and the Honor tube *(below)*.

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Discussion

Dr. Gilbert Cottam: I would like to ask about the diagnosis of the boy in the case. He had a chest infiltration, a generalized peritonitis and a ruptured appendix, but I am wondering if a diagnosis of actinomycosis might not have been considered.

Dr. Sivertsen: I am reluctant to say anything about this paper. It has been my unfortunate experience to have had two Miller-Abbott tubes become knotted in the intestinal tract. The first case was that of a fourteen-year-old boy from whom we were able to remove the tube without difficulty. The other was an eighty-two-year-old lady who had had a resection of the bowel because of obstruction. The tube became knotted at the end near the sac or bulb which receives the mercury, gas or air. In this case the tube itself was so tightly knotted that the air in the bulb could not be expelled. Consequently, it was with difficulty that we were able to pull it through

the intestinal tract. It became a question, before this was accomplished, whether or no we should operate to relieve the obstruction. However, we were finally able to remove it. She got along very well for four or five days, but on the sixth day after removal she died, possibly because of intussusception. We were not able to obtain a postmortem examination.

Also, I am reluctant to say much about mercury. I was the first to use it in the Miller-Abbott tube, as valuable in passing the tube through the pyloric end of the stomach. I think you will find the idea was given to Dr. Wangensteen in 1941, and he has given me credit for this original idea in the second edition of his book on intestinal obstruction.

Doctor Cottam: I should like to tell Dr. Sivertsen about a description of a diverticulum of the pharynx which led to death, in which the doctors used mercury, thinking that the obstruction caused by a diverticulum was of a different nature. At autopsy, a large amount of unpassed mercury was found. This was the famous case reported by Dr. Abraham Ludlow, surgeon, in 1767. (See my article in Pharyngeal diverticula in Minnesota Medicine, April, 1934, pp. 222-226.)

ACOUSTIC NEUROMAS

WILLIAM T. PEYTON, M.D.
Minneapolis, Minnesota

The treatment of acoustic neuromas has undergone a gradual evolution since the first attempt was made by McBurney[9] in 1891 to remove a cerebellopontine angle tumor. Acoustic neuromas are usually one of the most easily diagnosed intracranial tumors, yet patients with these tumors still come for operation in the final stages of their untreated evolution. In these late stages, not only is the risk of removal enhanced but the residual sequellae are more severe. Therefore, a review of some of the features of this tumor and a report on personal experience in its treatment should be of value.

Gross Pathology

Acoustic neuromas apparently arise in that part of the eighth nerve which lies in the internal auditory canal. As they grow and expand, they protrude through the porus acousticus into the pontine cistern.

Because they grow slowly and gradually displace the surrounding structures in the cerebellopontine angle, they may attain a surprisingly large size, notwithstanding the small space in which they originate. Weight is not frequently determined because they are removed piecemeal with curet and brain sucker, but one weighing 154 grams was reported by Sachs.[13] To obtain such size they displace the pons, medulla and cerebellum, becoming adherent and embedded in them. The tumor erodes the petrous pyramid and projects itself into every available crevice, including an extension through the tentorial notch. Thus it eventually occludes the cisterna at the tentorial notch and blocks the cerebrospinal fluid as it passes upward to be absorbed over the surface of the cerebral hemispheres. Intracranial pressure rises, and death occurs.

Symptoms

In the typical case, as one might expect, there is a chronological progression of symptoms. At first only the eighth nerve is involved; later, the function of the cranial nerves in the neighborhood and then the brain stem and cerebellum are affected, and finally symptoms of increased intracranial pressure are superimposed. Early irritation of the eighth nerve produces tinnitus aurium. Compression and destruction of the eighth nerve produces loss of hearing on the involved side. The cranial nerves in the angle become involved, especially the fifth nerve. Decreased corneal reflex on the side involved is, as a rule, the earliest finding in addition to disturbed eighth nerve function. Later, signs of cerebellar dysfunction appear, and eventually there is papilledema.

Differential Diagnosis

Other lesions, neoplastic, vascular or degenerative, which occur in the cerebellopontine angle may simulate acoustic neuromas. The differentiation of these lesions is often difficult, and sometimes only after exploration of the angle is the true nature of the lesion determined.

Treatment

Surgical removal, partial or complete, is now recognized as the only proper treatment for acoustic neuroma. Surgery in the treatment of acoustic neuromas has undergone a gradual evolution, from a very crude finger enucleation to partial removal by intracapsular enucleation, and finally to total enucleation, which seems to be more or less the operation of preference with neurosurgeons today.

When McBurney[9] attempted to remove one of these tumors, and for many years, thereafter, surgery for brain tumors was very unsatisfactory, and especially so for tumors of the posterior fossa. Most operations at that time were for tumors of the cerebrum in the region of the motor cortex where the danger of operation was lowest.[1,16] After this early unfavorable experience it was not until about 1905 that surgeons again became less reluctant to operate for tumors of the cerebellum.[14]

The operative mortality reported for finger enucleation of angle tumors was 67 to 87 per cent.[6,12,15,16,17] Cushing[2] operated upon his first case of acoustic neuroma in 1906 and began a fundamental revision in the surgery for acoustic neuroma when he performed an intracapsular enucleation of the growth. Mortality was immediately reduced by this intracapsular enucleation until, with increasing experience and modifications in technique the mortality was, in Cushing's last seventy-six cases, only 8 per cent. Many general improvements in neurosurgical technique contributed to this improvement. A few of the more important are (1) bilateral cerebellar exposure through a cross bow incision (1905); (2) release of intracranial pressure by tapping the lateral ventricle during operation, which was introduced in 1903

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From the Department of Surgery, Division of Neurosurgery, University of Minnesota.

and became routine by 1910; (3) use of suction instead of sponges to evacuate blood and fluid from the wound; (4) silver clips to occlude bleeding vessels (1909), and (5) late in the period, 1926, introduction of high frequency cautery in neurosurgery.

Dandy[3] in 1922 reported an operation for total removal of acoustic tumors which was an extension of Cushing's intracapsular removal, to include total removal of the capsule after the content had first been removed with a curet. Again in 1925,[4] and also in 1934,[5] Dandy reported improvements in this operation.

Olivecrona[10] began to perform Dandy's radical removal in 1931 and has become one of the most enthusiastic advocates of total removal.[11]

With the partial intracapsular removal of Cushing there were many recurrences within three or four years after operation, and in some, not enough of the upper part of the tumor was removed to re-establish the flow of cerebrospinal fluid, making early reoperation necessary.

With total removal, recurrence does not occur, but the technique is more difficult, especially when the tumor is large and adherent to the brain stem. It is very difficult to remove totally a large acoustic neuroma and preserve the seventh nerve.

The operative mortality reported for Cushing's intracapsular removal is 8 to 28 per cent,[2,8,10,11] and for total removal, 7 to 19 per cent.[7,11,12]

It is the policy of this author to remove acoustic neuromas totally if this is technically possible, but it still seems to be advisable to be content with partial removal of some of the very large tumors which are very adherent to the brain stem, and also of some of those with extreme erosion of temporal bone.

Since 1940 the author has done fourteen total removals with three postoperative deaths, a mortality of 21 per cent. The facial nerve was preserved anatomically in three cases, and there is good function of it in two of the patients. The other patient had not recovered facial nerve function when last seen.

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Discussion

Dr. Harold Buchstein: The acoustic neuroma, in many ways, is the most interesting of intracranial tumors. It is a benign lesion. It is so situated that it produces quite a characteristic syndrome which permits its recognition in an early stage. As a result, neurosurgeons have expanded a good deal of effort in developing the technique of surgical treatment of this lesion. I should like to commend Dr. Peyton on his results in the treatment of this tumor. His figures are admirable indeed and certainly compare very favorably with other published series. Usually a tumor of the acoustic nerve does not present vertigo as a prominent complaint. Tinnitis tends to disappear with time. When we see these patients, their complaint is one of deafness and cerebellar difficulty, or a complaint relating to increased intracranial pressure.

Dr. Wallace P. Ritchie: I feel very fortunate, not only in having heard Dr. Peyton's discussion, but also because everything worth while that I know about neuromas I have learned from Dr. Peyton. No matter what your surgical specialty may be, I am sure that Dr. Peyton's extremely remarkable results are obvious. If there is any operation in neurosurgery which requires a top performance not only of the surgeon, but of his assistants, the nursing staff, and the anesthesiologist, it is in this particular operation.

I wish to add one comment in regard to the facial paralysis which follows many of these operations. It is very disfiguring particularly to women. I believe the method of choice is to do a facial and seventh nerve anastamosis. Inasmuch as it takes some months for the nerve to regenerate so that the face will assume a more symmetrical attitude, I believe that it is well to insert, at the same time, a fascial graft from the temporal muscles to the corner of the eye and the corner of the mouth. In this way a patient may return to work a great deal sooner, and will not be embarrassed by the disfigurement of a full facial paralysis.

Dr. Horace Scott: One question: What is the differential diagnosis between Ménière's syndrome and acoustic neuromas?

Dr. Peyton: Bilateral acoustic neuromas are present in about 3 or 4 per cent of all acoustic neuromas, and they occur in young people who have generalized neurofibromatosis. In Dandy's 154 cases, the neuromas were bilateral in 4 per cent. In our relatively small group they have been more numerous, but this is no doubt due to wide variation of chance in a small series. We have had one case in which bilateral tumors were found at autopsy, and a second in which an acoustic neuroma was removed from one side, and the patient now has symptoms and signs of a second tumor on the other side.

The differential diagnosis between Ménière's disease and a small acoustic neuroma is at times very difficult. But, in general, between the attacks of Ménière's disease there are no symptoms or findings except loss of eighth nerve function. In acoustic neuroma, symptoms are apt to be continuous; in Ménière's disease, they are apt to be intermittent. The acoustic neuroma progresses to involve other nerves and structures in the cerebellopontine angle.

There are lesions which occur in the cerebellopontine

(Continued on Page 1032)

Reports and Announcements

AMA INTERIM MEETING

The second AMA Interim Meeting will be held in St. Louis, Missouri, November 30 to noon December 3, 1948.

The first national Medical Public Relations Conference will be held at the Statler Hotel on Saturday evening, November 27 under the sponsorship of the AMA. The annual meeting of Editors and Secretaries of the state medical associations will be held on Sunday and Monday, November 28 and 29, preceding the AMA meeting.

As was the case last year in Cleveland, the scientific program of the Interim Session is planned especially for general practitioners. A wide variety of clinical conferences and exhibits of clinical and pathological material will be correlated with the lecture meetings.

Members planning to attend the St. Louis meeting are urged to make use of the registration form which will appear every two weeks in the AMA *Journal*. Requests for reservations should be received before November 9, 1948.

AMERICAN COLLEGE OF SURGEONS HOSPITAL CONFERENCE

The twenty-seventh annual Hospital Standardization Conference will be held at the Biltmore Hotel, Los Angeles, from October 18 to 22, in conjunction with the thirty-fourth annual Clinical Congress of the American College of Surgeons, according to an announcement by Dr. Malcolm T. MacEachern, Associate Director and Chairman of the Administrative Board. A galaxy of hospital authorities from all parts of the United States and Canada will participate as speakers and discussion leaders in the five-day program, the last day of which, Friday, October 22, will be devoted to study tours of hospitals in Los Angeles and vicinity with the co-operation of the Southern California Hospital Council, of which Paul C. Elliott, Superintendent, Hollywood Presbyterian Hospital, is President. The hospital representatives are invited to attend the meetings of the Clinical Congress.

NATIONAL SOCIETY FOR CRIPPLED CHILDREN AND ADULTS

The 28th annual convention of the National Society for Crippled Children and Adults, Inc., will be held at the LaSalle Hotel, Chicago, November 15-17, 1948.

Many outstanding speakers in the fields of medicine, health and education will be on hand to present facts on progress in work with the handicapped during the past year, according to Lawrence J. Linck, executive director.

The convention will be attended by physicians, therapists, educators, workers with the handicapped and representatives of National Society's more than 2,000 state and local units throughout the United States, Canada, Alaska and Hawaii.

OMAHA MID-WEST CLINICAL SOCIETY

The Omaha Mid-West Clinical Society will hold its sixteenth annual assembly at the Hotel Paxton, Omaha, Nebraska, October 25 to 29, inclusive.

The television projection of a hospital clinic in three rooms of the Paxton Hotel will be an outstanding innovation. On Friday morning, there will be a clinico-pathologic conference and a panel discussion on "The Doctor in Court." Six outstanding physicians and attorneys will discuss such subjects as: (1) The Medical Expert Witness in Casualty Cases; (2) The Psychiatrist in Civil and Criminal Cases; (3) The Pseudo-Medical Expert Witness; (4) The Minnesota Medical Testimony Plan; and (5) the Necessity for Reform in Court Procedure Governing Medical Testimony.

Further information may be obtained by writing the Omaha Mid-West Clinical Society, 1031 Medical Arts Building, Omaha 2, Nebraska.

VAN METER PRIZE AWARD

The American Goiter Association again offers the Van Meter Prize Award of Three Hundred Dollars and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The Award will be made at the annual meeting of the Association which will be held in Madison, Wisconsin, May 26, 27, and 28, 1949, providing essays of sufficient merit are presented in competition.

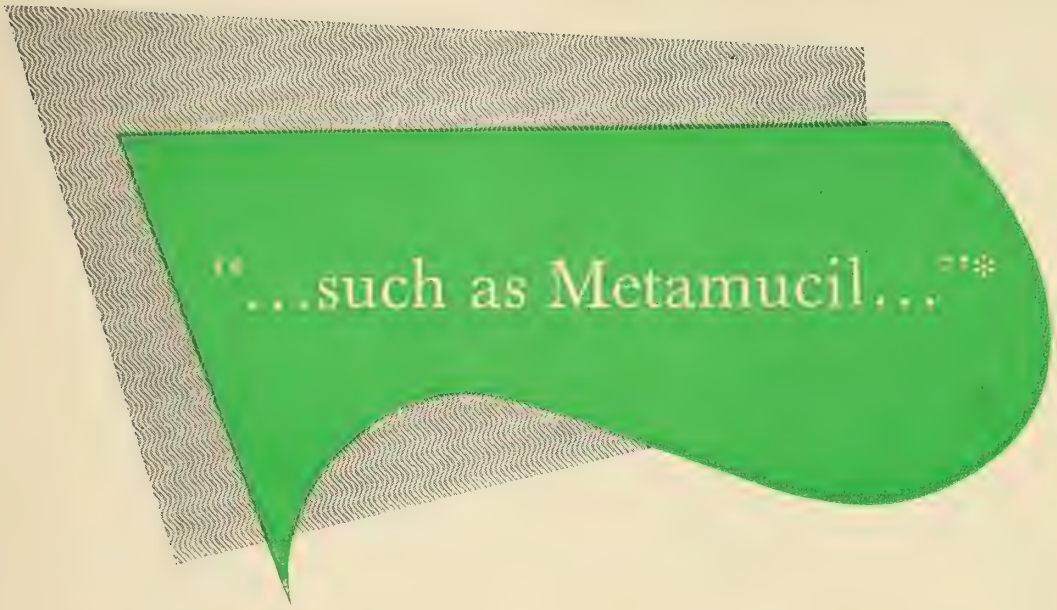
The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English; and a typewritten double spaced copy sent to the Corresponding Secretary, Dr. T. C. Davison, 207 Doctors Building, Atlanta 3, Georgia, not later than March 15, 1949. The committee, that will review the manuscripts, is composed of men well qualified to judge the merits of the competing essays.

A place will be reserved on the program of the annual meeting for presentation of the Prize Award Essay by the author, if it is possible for him to attend. The essay will be published in the annual Proceedings of the Association. This will not prevent its further publication, however, in any journal selected by the author.

UROLOGY AWARD

The American Urological Association offers an annual award of $1,000.00 (first prize of $500.00, second prize, $300.00, and third prize, $200.00) for essays on the result of some clinical or laboratory research in Urology. Competition shall be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

(Continued on Page 1030)



For the treatment of the spastic colon the author suggests diet, elimination of the nervous element and "bulk producers." As examples of these he lists "agar-agar, in finely powdered form, in flakes, or in cereal-like form; derivatives of psyllium seed, such as Metamucil . . . ."*

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*Glafke, W. H.: Spastic Colon, M. Clin. North America 26:805 (May) 1942.

†Council on Pharmacy and Chemistry: New and Nonofficial Remedies, 1947, Philadelphia, J. P. Lippincott Company, 1947, p. 320.

UROLOGY AWARD

(Continued from Page 1028)

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Biltmore Hotel in Los Angeles, May 16-19, 1949.

For full particulars write the Secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis 3, Tennessee. Essays must be in his hands before February 15, 1949.

COURSE IN CLINICAL ALLERGY

The Northwestern University Medical School will conduct a five-day course in clinical allergy at Thorne Hall, in the medical school in Chicago, from October 25 to 29, 1948. The course is under the sponsorship of the American Academy of Allergy. Lectures and demonstrations on the many phases of allergy by members of the Northwestern University Medical School faculty will occupy mornings and afternoons. A dinner and round-table discussion will be held on Tuesday, October 26.

The fee of $45 includes the price of the dinner and mimeographed notes. Attendance is limited to members of the profession and a limited number of residents and interns. Inquiries should be addressed to Dr. Samuel M. Feinberg, Northwestern University Medical School, 303 East Chicago Avenue, Chicago, Illinois.

COURSES IN PSYCHOSOMATIC MEDICINE TRAUMATIC SURGERY AND ORTHOPEDICS

An intensive two-week course in psychosomatic medicine will be given at the Center for Continuation Study of the University of Minnesota. The course is designed to assist the general physician in the diagnosis and treatment of psychosomatic problems. The course will be presented during the two-week period from September 20 to October 2. Enrollment will be limited to twenty-five physicians, because much of the material will be presented by means of group discussions and supervised clinical work.

The Department of Postgraduate Medical Education also announces a course in traumatic surgery and orthopedics, to be given for general physicians, October 7 to 9, in the Center for Continuation Study of the University of Minnesota. Registration for this course will be limited to 100 physicians.

COURSE ON TUBERCULOSIS

A course on tuberculosis and other diseases of the chest, for general practitioners, will be held October 18, 19, and 20 at the University of Minnesota's Center for Continuation Study in Minneapolis.

The American Trudeau Society, the University of Minnesota and the state Christmas Seal organization are co-sponsors of the course. County Christmas Seal associations are also participating by appropriating sums towards the expenses of two doctors from each district medical society to attend the course.

Subjects to be covered in the three-day meet, which will be a complete and condensed survey of tuberculosis and other diseases of the chest, are: physical examination in the diagnosis of tuberculosis; differential diagnosis of hemoptysis, pleurisy and pleural effusion; skin test in the diagnosis of chest diseases; laboratory aids in the diagnosis of diseases of the chest; family physician and chest x-ray surveys; chronic bronchitis and bronchiectasis of the lungs; fungus diseases of the chest; immunization in tuberculosis; antibiotics and chemotherapy in the treatment of tuberculosis.

TWIN CITIES NOW RESERVE MEDICAL CENTER

Colonel Raymond R. Tourtillott, State Senior Instructor for the Organized Reserve Corps, in a special release to MINNESOTA MEDICINE pays tribute to the efforts of Twin Cities Medical Department Officers. He states,

"Through aggressive organization and a show of interest by all concerned, the Organized Reserve Medical Units of the Twin Cities have now built their strength to where they may claim to be one of the most highly concentrated Medical organizations in the Northwest.

"Meeting at Fort Snelling, the organization contains eleven separate units and 617 members.

"The Units are headed by a Headquarters Hospital Center and number a General and a Station Hospital among them. There are also two large laboratory units, a Mobile Surgical Hospital, Medical Collecting Co., Malaria Survey Detachment, Malaria Control Detachment and a Medical Base Depot Co. A medical composite group contains additional medical officers with a wide variety of technical training.

"These units were organized by local Reserve Officers who served in World War II and are determined to support National Security through their efforts. The units are strong in numbers and have a healthy turnout at training periods. A more vigorous training program will get under way as soon as alterations are completed in the Medical Center at Fort Snelling, the Headquarters of these Units.

"Credit for organizing these Units goes to the Unit Commanders. As they do not wish their efforts to be connected with publicity, the Army bows to their modesty and patriotism and salutes their achievements. We can look to the words of Daniel Webster, 'God grants liberty only to those who love it, and are always ready to guard and defend it.'"

MINNESOTA PUBLIC HEALTH CONFERENCE

Doctors in all branches of the profession are cordially invited by the Minnesota Public Health Conference to attend the all-day session of the Conference at the Saint Paul Hotel, Saint Paul, on Friday, October 8, 1948.

Of special interest will be the noon luncheon for doctors and health officers, when the Minnesota Board of Health will meet to discuss with those present state and local health problems.

In charge will be Dr. T. B. Magath of Rochester, who is Board of Health president. Other Board members include Dr. Ruth S. Boynton, vice president; Dr. A. J. Chesley, secretary and executive officer; Dr. C. V. Netz; Mr. F. E. Bass; and Dr. T. H. Sweetser; all of whom are from Minneapolis; Dr. Sidney Hedeen of

St. Paul; Dr. F. W. Behmler of Morris; Dr. W. L. Webb, who lives in Fairmont; and L. M. Thompson of Little Falls.

This session will give all doctors concerned with public health a chance to bring their problems up for general discussion. Matters such as full-time health units will probably be aired.

At the general afternoon session, Dr. Donald A. Dukelow of Minneapolis, Conference executive secretary, will lead the panel discussion on the Pros and Cons of Local Health Services for Minnesota. Discussants will be Howard Ottinger and Harry L. Wahlstrand of the State Legislature, Louis C. Dorweiler who directs the Legislative Research Committee, and J. S. Jones of the Farm Bureau who serves as second vice president of the Minnesota Committee on Local Health Services.

Evening speaker will be Miss Katherine F. Lenroot chief of the United States Children's Bureau. Toastmaster will be Dr. Mario Fischer of Duluth.

All doctors interested in public health are eligible to become associate members of the Minnesota Public Health Conference, upon payment of a one-dollar membership fee. Doctors active in public health work of any kind may become active members of the Conference, with dues of two dollars a year. Memberships may be obtained at the Conference meeting, or from Dr. Donald A. Dukelow, Citizen's Aid Building, Minneapolis.

HEALTH DAYS

Health Days are scheduled for every section of Minnesota this fall, the Minnesota Department of Health announces.

Starting in southwestern Minnesota last February, when more than a thousand people assembled for a Health Day in Worthington, the idea of getting people together to discuss the health needs of their communities has spread all over the state.

On September 9 a very successful Health Day was held at Willmar for Traverse, Stevens, Pope, Swift, Lac Qui Parle, Chippewa, Yellow Medicine, Renville, Lincoln, Lyon, Redwood, Kandiyohi, Meeker, and Big Stone counties.

Plans are under way for the following Health Days:

September 29 at Fergus Falls for Clay, Becker, Otter Tail, Wilkin, Grant, and Douglas counties.

October 7 at Crookston for Kittson, Roseau, Marshall, Polk, Red Lake, Pennington, Lake of the Woods, Mahnomen, and Norman counties.

October 13 at Mankato for McLeod, Carver, Scott, Sibley, Le Sueur, Nicollet, Brown, Blue Earth, Watonwan, Waseca, Martin, and Faribault counties.

October 15 at Duluth for Lake, Cook, Carlton, Pine, and St. Louis counties.

Governor Youngdahl is speaking at evening meetings at each of these Health Days. Programs will include keynote speeches in the morning, also group discussion on health problems of local concern. Health films will be shown in the afternoon, panels will discuss community health problems, and there will be several ten-minute talks by local people. High school bands will furnish



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1. Kasper, J. A. and Jeffrey, I. A.: A Simplified Benedict Test for Glycosuria, Amer. J. Clin. Pathology, *14*:117-21 (Nov.) 1944.

2. Haid, W. H.: The Use of Screening Tests in the Clinical Laboratory, J. Amer. Med. Tech., *8*:606-14 (Sept.) 1947.

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entertainment at the evening meetings before the governor speaks.

Sponsoring groups for the fall health days are the Minnesota State Medical Association and its Woman's Auxiliary. The Minnesota Department of Health is assisting in organization and publicity.

It is the intention that all these health days will be followed, as in Southwestern Minnesota, by the formation of local or county health councils.

RIGLER LECTURE IN RADIOLOGY

Dr. Merrill C. Sosman, professor of radiology at Harvard university, will deliver the annual Dr. Leo G. Rigler lecture in radiology at the University of Minnesota Thursday, October 28, at 8 p.m. in the Minnesota Museum of Natural History auditorium.

Dr. Sosman, who will speak on the subject "Roentgenological Aspects of Heart Disease," is the contributor of numerous articles on the diagnosis and treatment of diseases or tumors by x-ray to scientific publications.

The annual Rigler lectureship was established in 1944 by colleagues, former students and friends of the roentgenologist in recognition of his contributions to teaching and research in radiology. He has been chief of the department of radiology at the University of Minnesota since 1926.

During the week of Dr. Sosman's lecture, from October 25-30, a continuation course in cardiovascular roentgenology, designed primarily for radiologists but open also to a limited number of internists, pediatricians and surgeons, will be held at the University's Center for Continuation Study.

CRIPPLED CHILDREN CLINIC SCHEDULE

Clinics for crippled children are being held in ten Minnesota cities this fall to serve residents of forty-three counties. The clinics are sponsored by the Crippled Children Services of the Medical Services Unit of the Division of Social Welfare. All clinics are held on Saturday except the two Friday ones indicated in the 1948 schedule which follows:

Place	*Date*	*Building*	*Counties*
Winona	9-11-48	Central School	Winona, Houston, Wabasha, Olmsted, Fillmore
Fergus Falls	9-18-48	High School	Ottertail, Wilkin
Bemidji	9-25-48	High School	Beltrami, Lake of the Woods, Clearwater, Hubbard
Willmar	10-8-48 (Friday)	Auditorium	Kandiyohi, Meeker, Swift, McLeod, Chippewa, Renville
Marshall	10-9-48	High School	Lyon, Lincoln, Redwood, Yellow Medicine, Lac qui Parle
Virginia	10-16-48	Technical High School	St. Louis
Crookston	10-23-48	High School	Polk, Mahnomen, Norman
Cambridge	10-29-48 (Friday)	Epileptic Colony Hospital	Isanti, Anoka, Kanabec, Chisago, Mille Lacs
Little Falls	10-30-48	High School	Morrison, Todd, Mille Lacs
Mankato	11-6-48	Franklin School	Blue Earth, Sibley, Nicollet, Le Sueur, Watonwan, Brown, Waseca, Martin, Faribault

RED RIVER VALLEY SOCIETY

A special summer meeting of the Red River Valley Medical Society, with nearly fifty physicians in attendance, was held in Thief River Falls on July 23.

Scientific papers were presented by Dr. Thomas J. Dry and Dr. Lawrence M. Randall, both from the Mayo Clinic in Rochester. The Blue Shield plan was explained in detail by Arthur Calvin, executive secretary of the Blue Cross organization. Also appearing on the program was Manley Brist, attorney for the Minnesota State Medical Association.

In charge of the program was Dr. Martin Bechtel, Warren, president of the society, assisted by Dr. Russell Sather of Crookston, secretary.

CLINICAL-PATHOLOGICAL CONFERENCE

(Continued from Page 1004)

edema in the remaining eighty-four patients of the entire study.

Of twenty-nine patients with hydronephrosis of varied etiology, twelve were due to benign prostatic hypertrophy and twenty-four had pyelonephritis. Of the twenty-four patients, twenty had bronchopneumonia, while only seventeen other cases of bronchopneumonia were found in the other seventy-six patients in the study. Seventeen out of twenty other serious infectious complications occurred in the pyelonephritic group. Not a single case of the eight patients with primary pyelonephritis was diagnosed properly.

In comparing these findings with studies of others, it should be borne in mind that many patients with serious primary kidney diseases described in our necropsy records were not included in this study, when it was felt that renal failure did not contribute significantly to the causes of death.

References

1. Bell, E. T.: Renal diseases. Philadelphia: Lea and Febiger, 1946.
2. Joffe, H. H.; Hatch, W. E., and Wells, A. H.: Congenital urethral valve, Minnesota Med., 30:56-59, (Jan.) 1947.
3. Wells, A. H.: Bilateral cortical necrosis of kidneys. Minnesota Med., 27:375, (May) 1944.

ACOUSTIC NEUROMAS

(Continued from Page 1027)

angle and give us equally as much difficulty in the differential diagnosis. They are degenerative lesions, vascular lesions, or other tumors in the angle. I might mention the other operations we have performed for lesions in the cerebellopontine angle during the period in which these twenty acoustic neuromas were encountered. There were three cases of meningioma in the angle, two gliomas in the pons, one tuberculous granuloma, one case of aberrant artery which passed around the eighth nerve producing deafness and vertigo, one case of trigeminal neuralgia with loss of hearing on the side of the pain (for this reason rhizotomy was done in the posterior fossa instead of the usual subtemporal rhizotomy), and one case which was explored and nothing found.

Woman's Auxiliary

ANNUAL MEETING

On Monday, June 7, the meetings of the Woman's Auxiliary to the Minnesota State Medical Association opened with a Board meeting and luncheon in the Italian Room of the Hotel Radisson, Minneapolis. The president, Mrs. J. A. Thabes, Sr., of Brainerd, presided.

Members of the Hennepin County Medical Auxiliary were hostesses to all visiting women at a tea and reception held in the Woman's Club of Minneapolis on Monday afternoon.

Many physicians and their wives enjoyed the evening at the Hotel Radisson Ballroom on Monday night.

On Tuesday, the twenty-sixth annual meeting of the Woman's Auxiliary was held in the East Room of the Curtis Hotel, Mrs. Thabes presiding. Mrs. Frederick Schaaf, president of the Hennepin County Medical Auxiliary, welcomed those attending and invited them to attend the various functions which had been planned for all guests. Mrs. S. S. Hesselgrave responded and thanked Mrs. Schaaf and the Hennepin County Auxiliary for their hospitality.

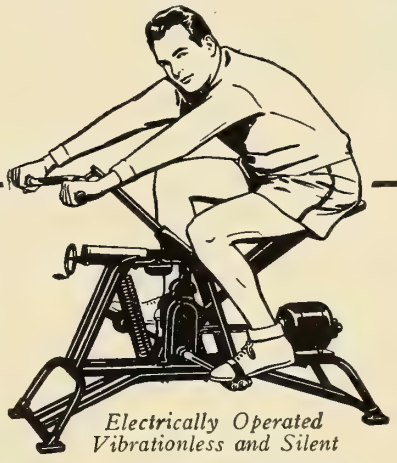
Annual reports of chairmen, officers and county auxiliary presidents followed. Mrs. Harold Wahlquist, president-elect, reported twenty-six organized counties and six counties still unorganized with several planning organizational meetings in the fall. Minnesota now has 1,632 members, of which 214 are new members.

The following officers were elected: President-elect, Mrs. H. E. Bakkila, Duluth; First Vice President, Mrs. Charles W. Waas, St. Paul; Second Vice President, Mrs. John Dordal, Sacred Heart; Third Vice President, Mrs. T. N. Fleming, St. Cloud; Fourth Vice President, Mrs. Ernest M. Hammes, St. Paul; Recording Secretary, Mrs. W. A. Merritt, Rochester; Treasurer, Mrs. George Penn, Mankato, and Auditor, Mrs. Henry W. Quist, Minneapolis.

It was voted unanimously to collect a sum from all County Auxiliaries to be turned into the State Auxiliary for the Dr. William A. O'Brien Memorial Fund.

The annual luncheon was held in the Wedgewood Room of the Curtis Hotel. Mrs. Thabes presented the newly elected officers. Mrs. Martin Nordland of Minneapolis presented the president's pin to Mrs. Harold Wahlquist who outlined Auxiliary objectives for the coming year. She also read the following communication from the Council of the Minnesota State Medical

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Association: "The Council approved a budget for the expenses involved in conducting a two-day School of Instruction this fall for county presidents and committee chairmen of the Auxiliary who will assume leadership in the development of Public Health Days throughout Minnesota from a planning and public relations standpoint. It also approved the expenses involved in sending out a quarterly News Letter to Auxiliary members."

Mrs. J. M. Neal, Program Chairman, of Minneapolis introduced the guest speaker, Dr. Stewart C. Thomson, Associate Professor, School of Public Health, University of Minnesota, whose topic was "Man's Fight Against Disease."

At the banquet of the State Association on Tuesday evening, Dr. Ralph Creighton, president of the Hennepin County Medical Society, presided and presented Mrs. Wahlquist who addressed the group.

The traditional breakfast given at ten o'clock on Wednesday morning by the members of the Hennepin County Auxiliary was a fine social climax to a busy three days. Everyone enjoyed the spontaneity with which Mrs. Leonard Arling read for us.

Members of the State Auxiliary are grateful to their gracious hostesses of Hennepin County for the charming and generous hospitality extended during their stay in Minneapolis.

Mrs. Harold Satterlee
Retiring Secretary

FALL ACTIVITIES

The Board members of the Woman's Auxiliary began making ambitious plans for an extremely busy year at the post-convention Board meeting in June. Details are being completed for a two-day School of Instruction in September and Area Health Days which are being co-sponsored by the Auxiliary, the Minnesota State Medical Association and the State Department of Health. The Health Days will be similar to the one held at Worthington last February with round-table discussions, health movies, exhibits and an evening address by the Governor. Wives of physicians in all communities will be in key positions assisting with promotional plans.

The School of Instruction to be held September 24 and 25 at the Radisson Hotel in conjunction with the fall Board session for representatives of the twenty-six organized counties is a new experiment. The program will be planned to assist members in knowing how to relate themselves better as wives of physicians and leaders in health to their communities. Round-tables on community health planning, legislation, rural health problems will be conducted by experts in their field, including Dr. Gaylord Anderson, Director of the School of Public Health, Dr. John O. Christianson, Superintendent of the School of Agriculture, both of the University of Minnesota, Mr. L. W. Rember, Executive Assistant in charge of Public Relations, AMA, and Mrs. Luther H. Kice, President of the Woman's Auxiliary to the American Medical Association. The State Association is graciously and indispensably assisting with details.

The MSMA is providing the Auxiliary Board two means to keep auxiliary members informed this year, and to be a *good* auxiliary member one must be informed. Every month we shall have a page in Minnesota Medicine. This is journal copy number one. In addition, the Association is generously underwriting a quarterly News Letter. Members received the first copy in August.

Mrs. Harold F. Wahlquist
President

MRS. JAMES BLAKE

It is with deep regret that the Woman's Auxiliary of the Minnesota State Medical Association announces the death of Mrs. James Blake of Hopkins, which occurred at her home on Wednesday, July 21, following a heart attack.

The Auxiliaries of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association have lost a valuable friend and counselor. Mrs. Blake was a past president of all three organizations. A pioneer and civic leader in her community, Mrs. Blake, although an invalid for four years previous to her death, did not allow her illness to lessen her enthusiasm for Auxiliary work. Those who sought her advice valued her wisdom and sound judgment.

Agnes MacDonald Blake was born in Mankato on December 16, 1878, where she attended school. She was graduated from Mankato State Teachers College and later taught in New Ulm. She was married to Dr. James Blake of Hopkins on June 20, 1904, and resided in Hopkins until her death.

Mrs. Blake was devoted to her family, although her efficiency and boundless energy enabled her to become a leader in community affairs. Not only did she devote considerable time to social and professional phases of Auxiliary work, but she also was a leader in the Minnesota Federation of Women's Clubs, in the Public Health and Nursing movements, and, during both World Wars, in Red Cross and war relief work.

Following World War I Mrs. Blake organized a civic-betterment group, the Agnes Blake Study Club, which was responsible for many improvements in recreation, park and civic facilities for Hopkins.

In spite of her many achievements in public life, Mrs. Blake was primarily a homemaker. She had six children: two daughters—Jeannette, a nurse at the Veterans Hospital, and Mrs. Charles Adams of Springfield, Illinois, and four sons—James A., Allen, and Paul, all physicians practicing in Hopkins, and Donald, who was killed while serving in the United States Army, stationed in California.

The Auxiliary extends its deepest sympathy to Doctor James Blake and his family. The keen loss which they feel is shared by every member of the organization. The vacancy created by her passing will be indeed difficult to fill.

Marie E. Hesselgrave

In Memoriam

HERBERT BENJAMIN ALLEN

Dr. H. B. Allen, chief physician for the George A. Hormel Company at Austin, Minnesota, died suddenly, August 24, 1948. He was forty-one years of age.

Born in Slayton, Minnesota, September 20, 1906, he was brought up in Staples where he attended grade and high school. He graduated from the University of Minnesota Medical School in 1937 and became associated with the Hormel Packing Plant the same year.

Dr. Allen is survived by his wife, Marion, and daughter, Lani. A brother, Frank Allen, lives in Duluth and a sister in Minneapolis.

LUTHER NOBLE BERG

Dr. L. N. Berg of Montevideo, Minnesota, passed away on June 2, 1948, at the age of sixty-seven.

Dr. Berg was born September 27, 1880, in Yellow Medicine County, Minnesota. He received a B.A. degree from Augsburg College, Minneapolis, in 1902 and his medical degree from the University of Minnesota in 1906. He interned at Ancker Hospital, Saint Paul.

He was a member of the Camp Release District Medical Society, the Minnesota State Medical Association and American Medical Association.

ARTHUR J. G. HENDERSON

Dr. Arthur J. G. Henderson, formerly of Kiester, Minnesota, died of a heart attack on May 16, 1948, at his home in North Saint Paul.

Dr. Henderson was born at Lake Mills, Iowa, on May 3, 1894. He attended St. Olaf College and the University of Minnesota before obtaining his medical degree at the University of Illinois in 1919. His internship was served at the Swedish Hospital in Minneapolis.

He was a member of the Blue Earth Valley Medical Society, the Minnesota State Medical Association and American Medical Association.

THEODORE HOLTAN

Dr. Theodore Holtan passed away at his home in Waterville, Minnesota, August 22, 1948, at the age of sixty-five, following a heart attack.

Dr. Holtan was born in Forest City, Iowa, April 8,

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1883. He attended Decorah Institute at Decorah, Iowa, and Hamline University, Saint Paul, before obtaining his medical degree at Marquette University, Milwaukee, in 1911. After interning at Asbury Hospital, Minneapolis, he practiced at Wheaton, Minnesota, from June, 1912, to February, 1918, and then at Kilkenny, Minnesota, until September, 1921. For the past twenty-seven years, he has been practicing his profession in Waterville.

Dr. Holtan was a member of the Nicollet-LeSueur Medical Society, the Minnesota State and American Medical Associations.

He leaves to mourn, his wife and two sons.

JAMES S. REYNOLDS

Dr. James S. Reynolds, former president of Hennepin County Medical Society, and specialist in eye, ear, nose and throat, met an untimely death July 7, 1948, at his country home where he and Mrs. Reynolds were victims of a double murder committed by Mrs. Reynolds' brother.

Dr. Reynolds was born March 15, 1880, at New Hampton, Iowa. He attended Ames College, Iowa, and received his medical degree from the University of Minnesota in 1905. He was a member of the American Medical Association, Minnesota State Medical Association, Hennepin County Medical Society, Minnesota Academy of Ophthalmology and Otolaryngology, of which he was president 1934-35, and a fellow of the American College of Surgeons. Socially, he was a member of Phi Beta Pi fraternity, Rotary Club, University Blue Lodge, Zuhrah Temple of the Shrine, and a Scottish Rite Mason of the highest degree.

"Jim," as everybody called him, was held in high esteem, both personally and professionally, by all who knew him. He was a man among men. He was chief of the eye, ear, nose and throat section at St. Barnabas Hospital, and his passing will be deeply felt.

He is survived by a sister, Mrs. Maude Glazier of New Hampton, Iowa.

ADOLPH A. PASSER

Dr. Adolph A. Passer of Olivia died of a cerebral hemorrhage on August 18, 1948. He was sixty-eight years of age.

Dr. Passer was born at Luverne, Minnesota, on January 3, 1880, the son of the Rev. Ludvig Passer. He obtained an A.B. degree from the University of Minnesota in 1902.

From 1902 to 1904, he was employed as high school teacher in Waseca, and from 1904 to 1907 he held a similar position at Virginia. During the next year he was employed as a drug store clerk at St. Cloud. In 1908, he returned to the University where he graduated in medicine in 1912. His internship was served at Minneapolis General Hospital.

He was a member of Renville County Medical Society and the Minnesota State and American Medical Associations. He was also a member of the local Masonic Lodge.

One of Olivia's prominent citizens and a practitioner there for thirty-five years, Dr. Passer was always active in civic and medical affairs. From 1920 to 1923, he served as president of the village council and, from 1913 to 1923, as county coroner. He was health officer for Olivia and Renville County for many years. He was also a county draft board member in the first World War and was examining physician for the Selective Service in the last war.

On May 15, 1913, Dr. Passer was married to Irene Monk, who survives him.

Dr. Passer was an able physician and his gentle and friendly manner endeared him to his many friends and acquaintances.

GEORGE E. VAUGHAN

Dr. George E. Vaughan of Winnebago, Minnesota, died May 31, 1948, from a pulmonary embolism following an operation at Rochester.

Dr. Vaughan was born September 14, 1865, in Lansing, Minnesota. He attended Pillsbury Academy, the University of Minnesota Medical School and the University of Chicago Medical School.

He began practice in Winnebago in 1907 and continued practice until his retirement in 1939. He is survived by two sons, C. C. Vaughan of Minneapolis and Dr. V. M. Vaughan of Truman, Minnesota.



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Of General Interest

Dr. Peter J. Kitzberger has become associated with Dr. R. V. Fait, Dr. D. L. Johnson and Dr. F. C. Anderson in a clinic in Little Falls.

* * *

Dr. C. G. Kelsey, for many years a practitioner in Hinckley, retired from active medical practice during the first week of July.

* * *

In July, at the age of seventy-one, Dr. J. T. Schlesselman of Mankato completed a half-century of general practice in medicine.

* * *

Among European travelers this summer was Dr. M. Berenice Moriarity, Saint Paul, who visited in England, Ireland and Scotland.

* * *

Dr. Norvin R. Smith announces the removal of his offices from 203 Loring Medical Building to Suite B, 1600 West Lake Street, Minneapolis.

* * *

Speakers from Minnesota at the Fall Clinical Conference of the Wells County Medical Society at Bluffton, Indiana, September 15, are Dr. J. Arnold Bargen of Rochester and Dr. Hamlin Mattson of Minneapolis.

Dr. A. Gordon Goude became associated in practice with Dr. C. J. Martinson of Wayzata during July. Dr. Goude replaces Dr. Roy W. Sorensen, who has moved to California.

* * *

In Hopkins (Minneapolis) Dr. A. C. Stahr expects to be able to move into his new office building in November. The building is now in the process of construction.

* * *

As guest speaker before the Rotary Club in Rochester on July 15, Dr. Viktor O. Wilson, city health officer, presented a talk on "Rochester's City Health Departments."

* * *

Dr. and Mrs. Hugh Beals, Saint Paul, sailed on the *Queen Mary* for Europe early in August. They planned to spend two months visiting the Scandinavian countries and England.

* * *

"Medicine and Diseases with New and Improved Methods of Treatment" was the title of a talk given by Dr. Frank J. Hirschboeck, Duluth, at a meeting of the Duluth Rotary Club on August 12.

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Surgical Anatomy and Clinical Surgery, two weeks, starting September 27, October 25, November 22.
Surgery of Colon and Rectum, one week, starting October 18, November 15.
Surgical Pathology every two weeks.
FRACTURES AND TRAUMATIC SURGERY—Intensive Course, two weeks, starting October 25.
GYNECOLOGY—Intensive Course, two weeks, starting October 11.
Vaginal Approach to Pelvic Surgery, one week, starting October 25.
OBSTETRICS—Intensive Course, two weeks, starting October 25.
UROLOGY—Intensive Course, two weeks, starting September 27.
MEDICINE—Intensive Course, two weeks, starting October 11.
Personal Course in Gastroscopy, two weeks, starting September 27, November 8.
Gastroenterology, two weeks, starting October 25.
Hematology, one week, starting October 4.
DERMATOLOGY—Formal Course, two weeks, starting October 4.
Clinical Course every two weeks.
OPHTHALMOLOGY—Intensive Course, two weeks, starting September 20.
Refraction Methods, four weeks, starting October 11.
Ocular Fundus Diseases, one week, starting November 15.
OTOLARYNGOLOGY—Intensive Course, two weeks, starting October 18.

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Dr. Isadore Fisher has become associated with Dr. Harry A. Cummings in the practice of Dermatology and Syphilology, with offices at 1218 Medical Arts Building, Minneapolis.

* * *

Dr. W. A. Coventry of Duluth is one of four physicians appointed by the AMA Trustees to a liaison committee to work with the American Red Cross in studying the national blood bank program.

* * *

Formerly of Ceylon, Dr. I. Fisher has announced his association in practice with Dr. Harry A. Cumming, with offices at 1218 Medical Arts Building, Minneapolis. Dr. Fisher's practice will be limited to dermatology and syphilology.

* * *

Dr. William Roemmich, tuberculosis control officer of the Minneapolis Health Department, took part in a panel discussion at Saratoga Springs, New York, on July 21. He presented an analysis of information collected in the Minneapolis x-ray survey.

* * *

Dr. Henry W. Meyerding, Rochester, attended the fourth congress of the International Society of Orthopaedic Surgery and Traumatology held in Amsterdam, Netherlands, September 13 to 18. Dr. Meyerding acted as presiding officer of the congress.

* * *

During the latter part of July, Dr. Thomas J. Dry, Rochester, was a speaker at a meeting of the Red River Valley Medical Society in Thief River Falls. Dr. Dry spoke on "The Differential Diagnosis of Congenital Cardiac Defects Amenable to Surgical Treatment."

* * *

It was announced on July 29 that Dr. Thomas G. Boisclair, of Milwaukee, had become associated in practice with Dr. Arnold Larson in Detroit Lakes. A graduate of George Washington University Medical School, Dr. Boisclair served his internship at Emergency Hospital, Washington, D. C.

* * *

Braham acquired a new physician on July 1 when Dr. E. F. Beyer arrived from Saint Paul to become associated in practice with Dr. W. T. Nygren. Dr. Beyer, a graduate of the University of Minnesota Medical School, served his internship at Miller Hospital, Saint Paul.

* * *

After thirty-four years of practice in Keewatin, Dr. E. H. Loofbourrow announced his retirement from active medical practice early in August. On August 14, residents of Keewatin and the surrounding area held a reception in honor of Dr. Loofbourrow and presented him with a gift of appreciation.

* * *

Alumni and graduating nurses of the Wesley Hospital training course in Wadena gathered on the evening of June 29 to express appreciation and gratitude to Dr. J. S. Grogan of Wadena who had recently retired from active medical practice. The group presented Dr. Grogan with a combination radio-phonograph.

* * *

After completing his internship this summer at the University of Indiana Medical Center, Indianapolis, Dr. William Lovshin, formerly of Chisholm, accepted a position on the staff of the More Hospital in Eveleth. Dr. Lovshin is a graduate of the University of Wisconsin Medical School.

* * *

Forty-four newly arrived Mayo Foundation Fellows were welcomed to Rochester at a banquet held in the Mayo Foundation House on July 12. Principal speaker for the occasion was Dr. W. E. Herrell, head of a medical section in the Mayo Clinic. Dr. C. P. Blunt acted as toastmaster.

* * *

A native of Mankato, Dr. Joseph C. Von Drasek has returned there to become associated in practice with Dr. Roger G. Hassett at the Mankato Medical Center. Dr. Von Drasek was graduated from the University of Minnesota Medical School in 1946 and served his internship at St. Mary's Hospital in Duluth. He was a resident physician at Midway Hospital, Saint Paul, for one year.

* * *

During the summer Dr. Lyle Benson, who had just completed two years of service at the Veterans Hospital in St. Cloud, became a staff member of the Hoidale-Workman Clinic in Tracy. A graduate of the University of Minnesota Medical School, Dr. Benson served his internship at Minneapolis General Hospital before going on active duty in the army.

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In Isanti on July 12, Dr. F. A. Lengby, a former resident of Saint Paul, opened offices for the practice of medicine. A graduate of the University of Minnesota Medical School, Dr. Lengby interned at Bethesda Hospital, then served overseas in the army. For a short time last spring Dr. Lengby assisted Dr. W. T. Nygren of Braham.

* * *

The University of Minnesota Medical School has been named as a residual beneficiary of the $150,000 estate of the late Dr. James S. Reynolds of Minneapolis. The estate is to be placed in trust for Dr. Reynold's sister, upon whose death the remainder of the estate is to be used as a scholarship fund in the University Medical School.

* * *

"Mental Hygiene and Education" was the title of a radio talk given by Dr. Harold B. Hanson, Minneapolis, over Station WREX, Duluth, on August 10. Dr. Hanson, a psychiatrist, is director of the Child Guidance Clinic of the Minneapolis Public School System. The radio program was sponsored by the Duluth branch of the American Association of University Women.

* * *

Dr. Abraham Shedlov is retiring from active practice, after twenty-eight years of service as a physician, and will make his home in Long Beach, California, where he will be established after October at 1038 Harding Street. Dr. Shedlov's practice at Fosston, Minnesota, will be taken over by Dr. Hartvig Roholt, formerly of Waverly, Minnesota.

* * *

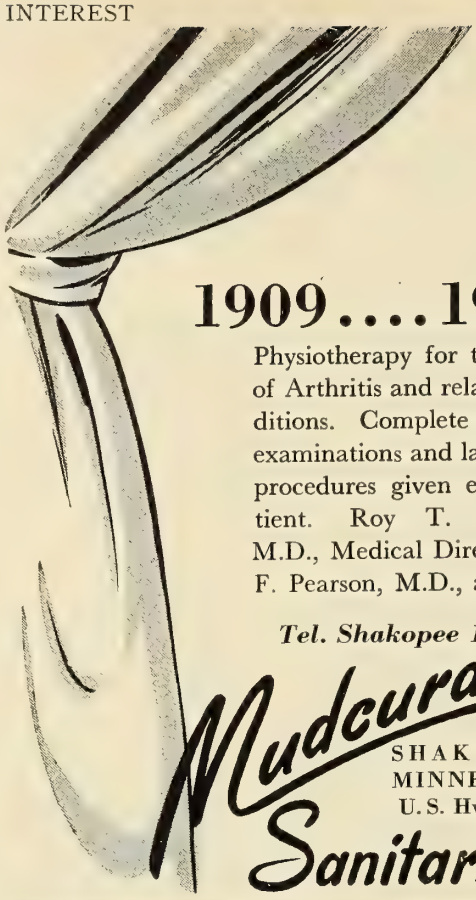
Announcement has been made that Dr. G. J. Plattes, a former St. Cloud resident, is now associated in practice with Dr. A. F. Giesen in the Minnewaska Clinic in Starbuck. Dr. Plattes, a graduate of the University of Minnesota Medical School in 1944, spent two years at Harper Hospital in Detroit, Michigan, before becoming a medical officer in the navy. Following his discharge from service, he was on the staff of Minneapolis General Hospital.

* * *

Speaking at a convention in July of the American Association of Workers for the Blind, Dr. William L. Benedict, head of the Mayo Clinic Ophthalmology Section, stated that of 419 cornea-transplant operations performed at five eastern hospitals over a five-year period, only 36.4 per cent were successful. The main cause of failure, he said, was that many of the corneal transplants did not remain clear for more than a few months.

* * *

A new staff member of the Interstate Clinic in Red Wing is Dr. Winston R. Miller, who on August 2 became associated with Dr. R. V. Sherman in the department of internal medicine. A graduate of the University of Kansas, where he received M.S. and M.D. degrees and also taught bacteriology for four years, Dr. Miller served in the navy for three years during the war. Following his discharge from service, he was on the medical staff of Henry Ford Hospital in Detroit, Michigan.



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Dr. Chester A. Anderson, after practicing in Winsted for two years, took over the practice of Dr. Ralph Erickson in Hector on August 15. Dr. Erickson, who has practiced in Hector for ten years, is retiring from active practice and is moving to San Francisco. Dr. Anderson located at Winsted two years ago after serving in the armed forces for two years in the European Theater of Operations.

* * *

Dr. John C. Hays has opened offices at 936 Lowry Medical Arts Building, Saint Paul, for the practice of internal medicine. Dr. Hays graduated from the University of Minnesota in 1943, and took an internship and a year of residency at the Minneapolis General Hospital. After serving in the Medical Corps of the Army for a year and a half, he completed his residency at the U. S. Veterans Hospital in Minneapolis.

* * *

Dr. Olaf Mickelsen, associate professor in the University of Minnesota's laboratory of physiological hygiene, has resigned his position to become chief of the biochemical section in the United States Public Health service nutrition division in Washington, D. C. Dr. Mickelsen has been on the staff of the University of Minnesota since 1940. He will begin his new duties in Washington at once.

* * *

The American Medical Association is building a five-story addition to its headquarters at 535 North Dearborn Street, Chicago. The addition will cost $500,000 and will add about 25 per cent more floor space. Two stories were added in 1936 to the original six-story structure built in 1923, and a three-story wing was added in 1941. Further additional space is required to house the additional activities of the Association.

* * *

Dr. Troy Rollins arrived in Elmore on July 1 to join Dr. Harry Shragg and complete the transfer of the former practice of Dr. A. W. Sommer. The practice, which Dr. Rollins and Dr. Shragg acquired from Dr. Sommer, was conducted alone by Dr. Shragg from January to July, awaiting the completion of Dr. Rollin's internship at Ancker Hospital, Saint Paul. Dr. Sommer is now practicing in Temple, Texas, serving as radiologist with the Scott-White Clinic.

* * *

It was announced in July that two recent University of Minnesota graduates planned to open a medical-dental clinic in Fairmont on September 1. The physician-dentist team is composed of Dr. Jerome L. Behounek, formerly of Marshall, who graduated from the University of Minnesota Medical School in 1945, and Dr. Russell J. Kotval, formerly of Livermore, Iowa, who received his dental degree at the University School of Dentistry this past spring.

* * *

On July 18, Dr. Gunnar Linner announced the opening of new offices at 6614 Lyndale Avenue S., Richfield (Minneapolis). A graduate of the University of Minnesota Medical School, Dr. Linner practiced in south Minneapolis until 1940, when he entered the army. After two years overseas he returned to the United States and served as hospital commander at Camp Ellis, Fort Lewis and Camp McCoy. He was on active duty for seven years.

* * *

In a presentation ceremony sponsored on July 14 by the Lions and Rotary Clubs of St. Peter, Dr. F. P. Strathern, president of the Nicollet County Board of Health, was honored for his services in the fight against tuberculosis. At the ceremony a plaque was presented to him by Dr. E. A. Meyerding, executive secretary of the Minnesota Public Health Association. Dr. Strathern has practiced medicine for nearly fifty years and has headed the Nicollet County Christmas Seal drive for twenty-five years.

* * *

Dr. Gaylord W. Anderson, director of the University of Minnesota School of Public Health, returned to Minneapolis during the middle of July from an eight-week "good will" tour of South American schools of public health. The tour was under the auspices of the U. S. State Department. As a secretary of the Association of the Schools of Public Health in the U. S., Dr. Anderson visited and lectured at schools in Brazil, Argentina and Chile.

"South American doctors," he reported, "are grappling principally with health worries such as tuberculosis, intestinal diseases, nutrition and housing."

* * *

Dr. Magnus C. Peterson has returned to his office as superintendent of the Rochester State Hospital, following a sojourn overseas.

During the past two months Dr. Peterson has visited mental hospitals in Denmark, Sweden and Portugal and presented a paper at the first international conference on psychosurgery held in Lisbon, Portugal, August 3 through 7.

Presentation of the paper at the conference was his main reason for going to Europe. Entitled "Pre-frontal



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Lobotomy," the paper was prepared in collaboration with Dr. J. Grafton Love of the Mayo Clinic.

* * *

Dr. Alexander Dumas, clinical assistant professor of psychiatry and neurology at the University of Minnesota, presented the second in a series of radio talks on mental health over Station WREX, Duluth, on July 27. Dr. Dumas spoke on "The Nature and Extent of the Problem." The third talk in the series was given on August 3 by Dr. Roger W. Howell, clinical assistant professor of psychiatry at the University of Minnesota, who spoke on "The Nature and Causes of Mental Illness." The radio series is sponsored by the American Association of University Women as part of a statewide education program.

* * *

Mrs. James Blake, the wife of Dr. James Blake of Hopkins (Minneapolis) and a prominent leader in medical auxiliary affairs, died at her home on July 21. A resident of Hopkins since her marriage in 1904, Mrs. Blake was active in auxiliary work at county, state and national levels. Several years ago she was president of the American Medical Association Auxiliary.

She is survived by her husband; by three sons, Dr. James A. Blake and Dr. Allan Blake, both of Hopkins, and Dr. Paul Blake, stationed at a veterans' hospital; and by two daughters, Mrs. Charles Adams, a nurse in Springfield, Illinois, and Jeanette Blake, of Hopkins. A fourth son, Donald, was killed in service during World War II.

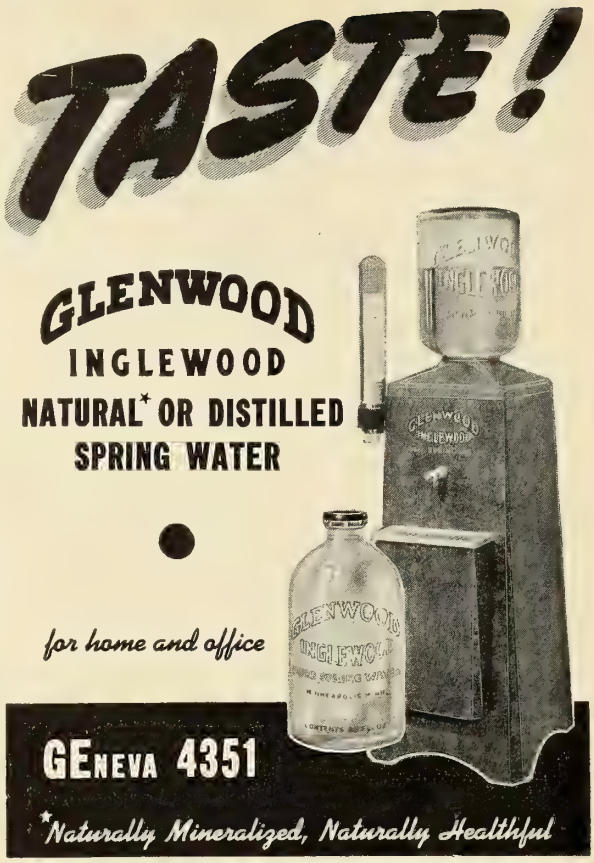
* * *

Dr. Cassius J. Van Slyke has been appointed Director of the National Heart Institute, one of the Institutes of Health in the U. S. Public Health Service. The National Heart Institute was created by Congress in the National Heart Act enacted June 16, 1948. Its program will include the conduct of research, financial aid to outside institutions for research, training of professional personnel and grants-in-aid to the states for heart disease control. Headquarters will be at the National Institute of Health, Bethesda, Maryland. Dr. Van Slyke received his medical degree from the University of Minnesota in 1928 and a commission in the Public Health Service in 1932. Assignments include experimental research at the Venereal Disease Research Laboratory at Stapleton, Staten Island. Since 1945 he has been in charge of the research grants-in-aid and fellowship program of the National Institute of Health.

* * *

Announcement was made in late July that two additional physicians would join the staff of the Austin Clinic in the near future.

Dr. Thomas M. Seery, a graduate of the University of Minnesota Medical School in 1942, planned to arrive in Austin on October 1. Dr. Seery interned at Minneapolis General Hospital and then spent three years in military service. Since receiving his discharge he has studied internal medicine at the Milwaukee County General Hospital and the University of Minnesota Hos-



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pitals. In addition to his medical degree, he has a Minnesota master of science degree in pharmacology and bacteriology.

The other physician, Dr. Edward C. Sargent, Jr., will arrive in Austin about January 1, 1949. A graduate of Western Reserve University, in Cleveland, and a veteran of three years of naval service, Dr. Sargent is now completing a term as senior resident in obstetrics and gynecology at the University of Minnesota Hospitals. In Austin his practice will be limited to his specialty.

* * *

BLUE SHIELD NEWS

Number persons covered by Blue Shield, July 31, 1948—34,526
Applications received to date listed over 49,000
Number Blue Shield cases paid, July 15—July 31, 1948— 228
Total for 1948— 1,053
Amount paid on Blue Shield cases, July 15—
July 31, 1948—$ 9,401.45
Total for 1948— 39,574.84

In July, 1948, the Minnesota Blue Shield completed its sixth month of making allowances on Blue Shield cases. At that time a six-month survey was made, and some rather interesting facts and figures were obtained. Of the 832 professional services for which allowances were made, only thirty-five were for appendectomies; however, this accounted for the largest allowance for any surgical procedure, $2,668.75. The greatest number of claims were paid for the removal of tonsils and adenoids. This procedure totaled forty-nine cases in the amount of $1,563,75 (5.20 per cent of all allowances made).

The largest allowance made was $6,727.89 (22.38 per cent) for medical care received by Blue Shield subscribers and dependents who were hospitalized. The attending physician received on the average of $22.57 for each medical case. It is interesting to note that in talking with physicians throughout the state and also with business managers of clinics, it has been stated that the Blue Shield allowance for medical care on the average is more than the physician's usual charge. This is very gratifying. On the other hand, the charges for surgery are greater than the Blue Shield allowance; however, the medical and surgical allowances compensate for each other.

The average amount paid on Blue Shield cases of all types—that is, medical care, surgery, maternity, fractures, x-rays, and anesthesia was $38.55. This may not seem like very much, but when it is considered that the largest percentage of cases were for minor surgery this is not too low a figure.

In the last six months only fifty-eight non-participating doctors of medicine have received allowances for services rendered Blue Shield subscribers. This would indicate that the greater percentage of the physicians in Minnesota are now participating with Blue Shield.

Blue Shield enrollment of subscribers is progressing very well. In the month of July, the Blue Shield—Blue Cross representatives brought in almost 4,500 new applications. That, to date, is the largest number obtained in any one month. Also Blue Shield is now available to all Blue Cross subscribers who are on a bill-direct basis. There have been many requests for this type of coverage, and it is felt that now is the proper time to start it off. This will net the Blue Shield many more subscribers.

Physicians are pleased with the small amount of bookwork involved in Blue Shield cases and with the simplicity of Blue Shield forms which merely request that the diagnosis and type of service rendered be given and that the form be completed by the doctor's signature. Blue Shield, as it is growing, needs the help and cooperation of every doctor in the state, and, without a doubt, is receiving it.



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BOOK REVIEWS

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BOOKS RECEIVED FOR REVIEW

ESSENTIALS OF PATHOLOGY. Third Edition. Lawrence W. Smith, M.D., F.A.C.P. Formerly Professor of Pathology, Temple University School of Medicine; Associate Professor of Pathology, Cornell University Medical School and Assistant Professor of Pathology, Harvard Medical College; Corresponding Member of the Royal Flemish Medical Academy of Belgium; and Edwin S. Gault, M.D., F.A.C.P., Associate Professor of Pathology and Bacteriology, Temple University School of Medicine. Foreword by the late James Ewing, M.D. 764 pages. Illus. Price $12.00, cloth. Philadelphia: The Blakiston Company, 1948.

PREOPERATIVE AND POSTOPERATIVE CARE OF SURGICAL PATIENTS. Hugh C. Ilgenfritz, A.B., M.D., F.A.C.S. Formerly Assistant Professor of Surgery, Louisiana State University School of Medicine, and Visiting Surgeon, Charity Hospital of Louisiana at New Orleans. 898 pages. Illus. Price $10.00, cloth. St. Louis: C. V. Mosby Co., 1948.

HANDBOOK OF ORTHOPAEDIC SURGERY. Third edition. Alfred Rives Shands, Jr., B.A., M.D. Medical Director of the Alfred I. duPont Institute of the deNemours Foundation, Wilmington, Delaware; Visiting Professor of Orthopaedic Surgery, University of Pennsylvania School of Medicine, Philadelphia, in collaboration with Richard Beverly Raney, B.A., M.D., Associate in Orthopaedic Surgery, Duke University School of Medicine, Durham, N. C.; Lecturer in Orthopaedic Surgery, University of North Carolina School of Medicine, Chapel Hill, N. C. 574 pages. Illus. Price $6.00, cloth. St. Louis: C. V. Mosby Co., 1948.

MICROBIOLOGY AND PATHOLOGY. Fourth Edition. Charles F. Carter, B.S., M.D. Instructor in Pathology and Applied Microbiology, Parkland Hospital School of Nursing, Dallas, Texas; Director Carter's Clinical Laboratory, Dallas; Consulting Pathologist, St. Louis Southwestern Railway Hospital, Texarkana, Arkansas; Consulting Pathologist Mother Frances Hospital, Tyler, Texas; Formerly Director of Laboratories, Parkland Hospital. 845 pages. Illus. Price $5.00, cloth. St. Louis: C. V. Mosby Co., 1948.

MEDICAL WRITING, The Technic and Art. Second Edition. Morris Fishbein, M.D., Editor, The Journal of the American Medical Association. With the assistance of Jewel F. Whelan, Assistant to the Editor. 292 pages. Illus. Price $4.00, cloth. Philadelphia: The Blakiston Co., 1948.

Though Dr. Fishbein's latest book may not teach all physicians how to write perfect scientific papers, its suggestions will help any medical writer to produce a manuscript that has a better chance of being published and a far better chance of being carefully read.

Too many articles submitted to medical journals, the book points out, are merely typed copies of papers that were presented before medical societies. They were good for opening a discussion or for filling an entire evening's program. For publication, however, they need a thorough revision. Often they are verbose, ungrammatical, poorly organized and full of nonessential material. They usually are returned to the author with a polite note. Unfortunately, however, since medical journals have pages to fill and enough good papers are sometimes lacking, such manuscripts seem to appear in print fairly frequently. They are read infrequently.

An attempt to change this situation—to show writers how to prepare better papers—is made by Dr. Fishbein in this book.

Throughout the book, Dr. Fishbein makes good use of the teaching technique of indicating what *not* to do. He illustrates his points with sentences, paragraphs and photographic material taken from manuscripts submitted to the *Journal of the AMA*. He offers general rules and analyzes specific details. He states that case reports should not be jerky telegraphic transcripts from original record sheets, and that they should not contain unimportant and irrelevant observations. Medical jargon should not be used; there is no such thing as an "acute abdomen" or a "right heart." Ordinary nouns should not be made into verbs, as is often done in medical writing: "Astronomers never telescope the sky; bacteriologists never microscope their slides; but urologists do not hesitate to cystoscope their patients."

In addition to describing what the potential author should not do, Dr. Fishbein gives sound advice on how to prepare a manuscript and how to revise it; how to select and prepare illustrations, tables and charts; how to use abbreviations, arrange bibliographic material, compile an index; and how to correct proofs so that both author and printer know what is meant.

The style advocated by Dr. Fishbein for spelling, capitalization, punctuation, et cetera, is that used by the American Medical Association Press. Other editors and publishing houses may prefer different styles. Yet, a medical writer, no matter to what publication he plans to submit his paper, could do worse than to follow the AMA style described in this book. It is clear, simple and consistent, and any desired variations in it could be made easily by the copy editors of individual publications.

All in all, practically every medical writer can learn something from this book. A thorough reading of it and an observance of its suggestions should enable any scientific writer to improve his future manuscripts, and, as a result, allow medical editors to lead far more enjoyable lives.

J. H. L.

CARCINOMA OF THE BREAST

(Continued from Page 1021)

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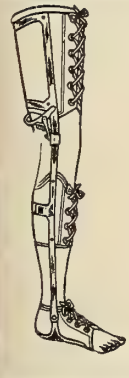
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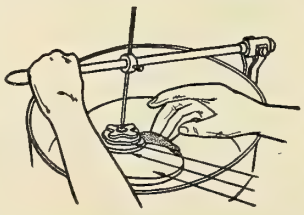
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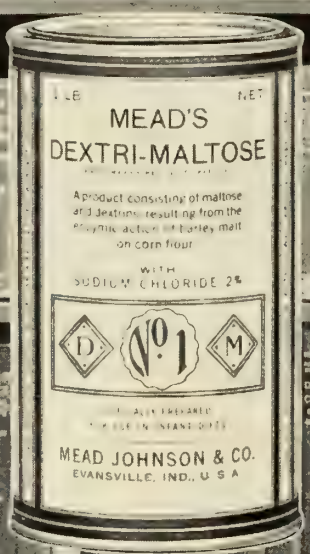
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(1) Follis, R. H.; Jackson, D.; Eliot, M. M., and Park, E. A.: Am. J. Dis. Child. 61:1 (July) 1943.

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1. Follis, R. H., Jackson, D., Eliot, M. M., and Park, E. A.: *Am. Jour. Dis. Child.*, 66:1, July, 1943.
2. Stearns, G.: *Jour. Lancet*, 63:344, Nov., 1943.

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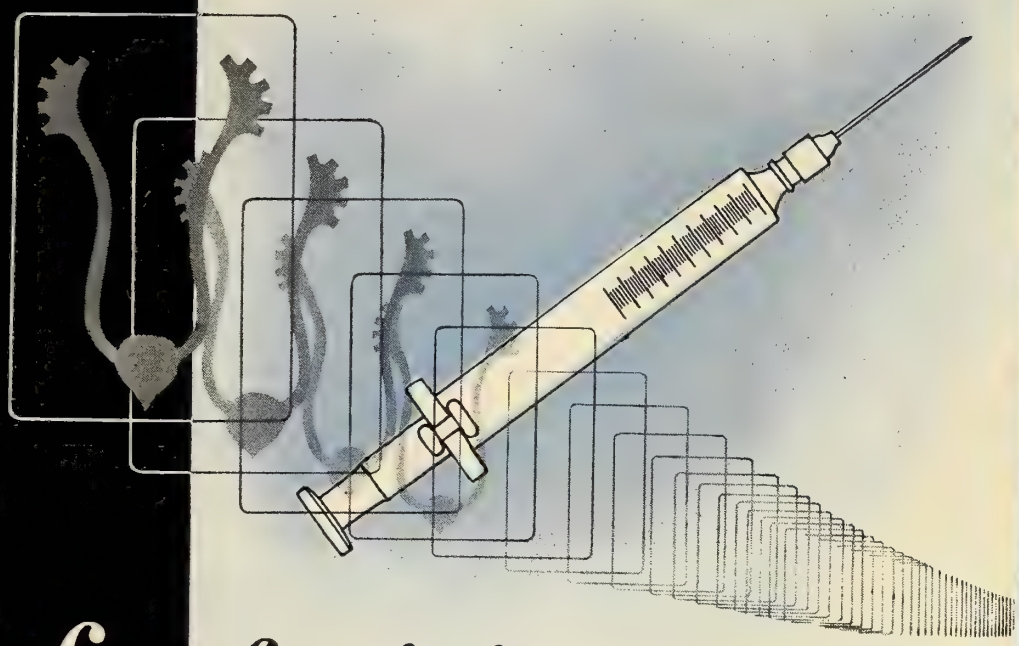
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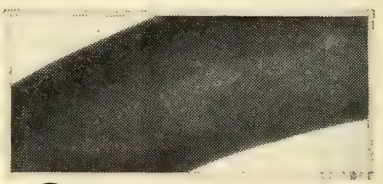
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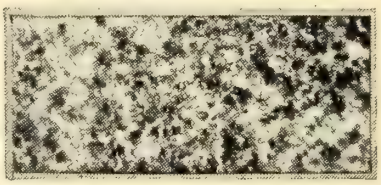


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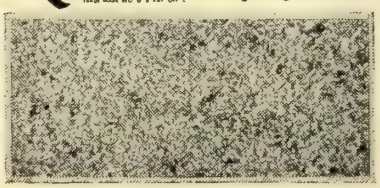


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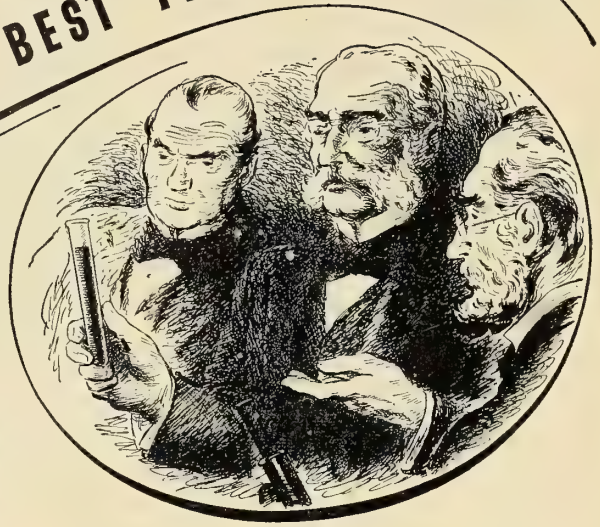
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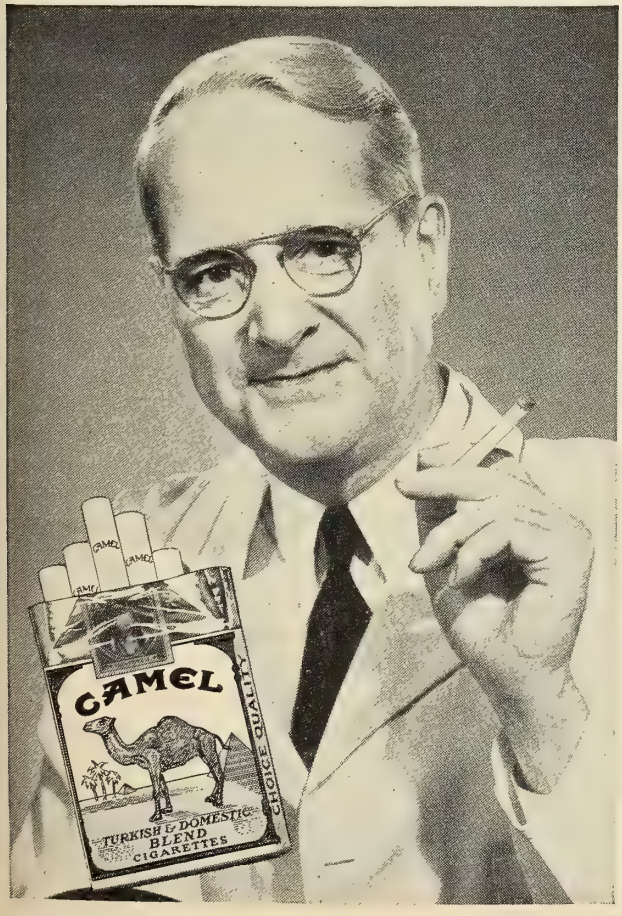


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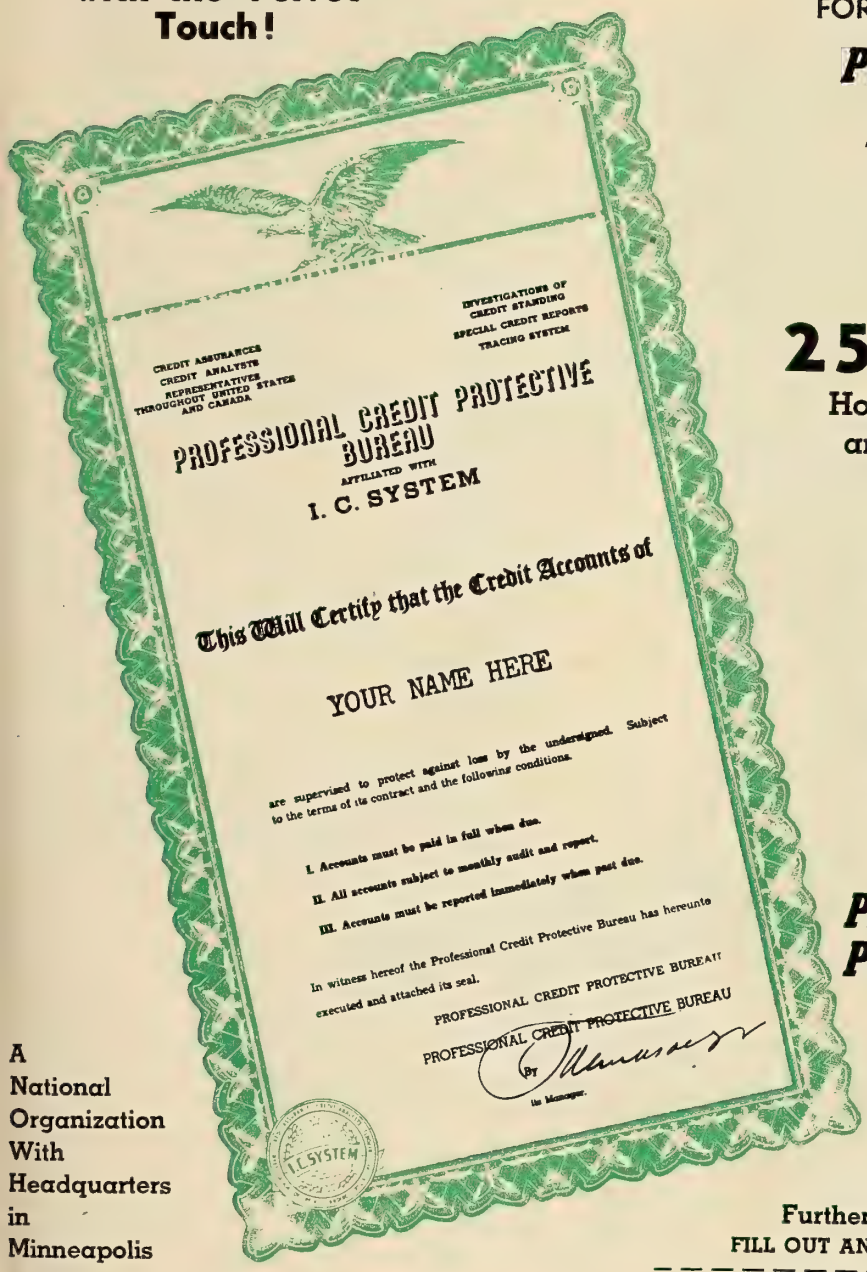
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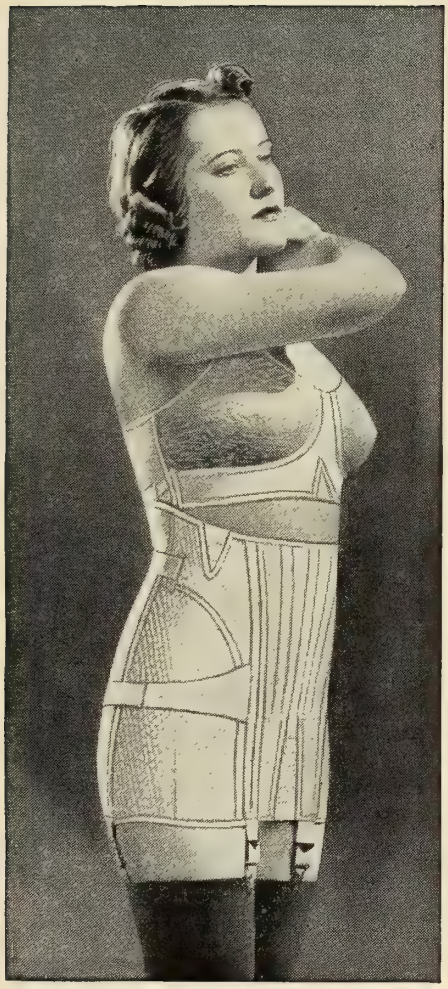
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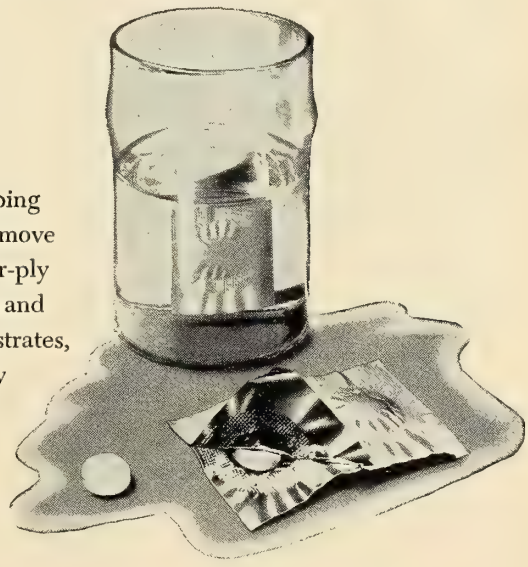
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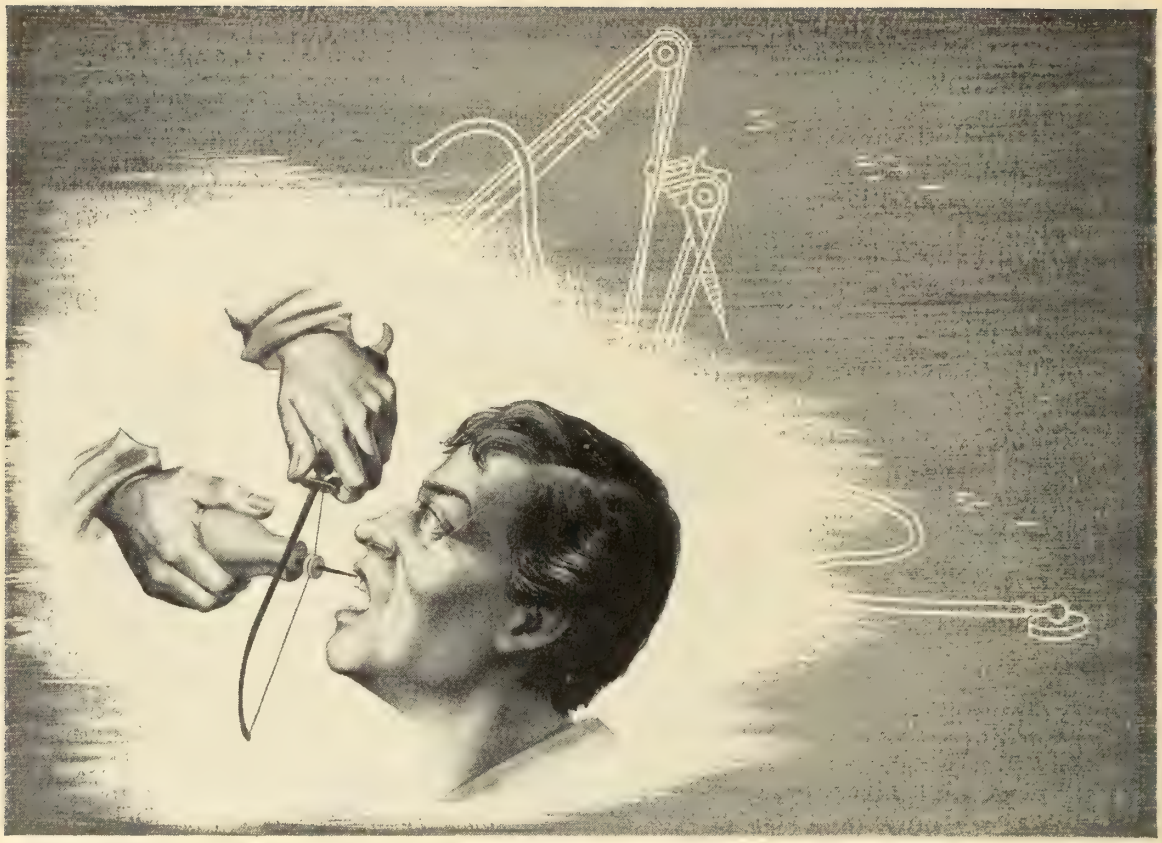
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1. Hoffman, W. S., and Volini, I. F.: Am. J. M. Sc. 213:520 (May) 1947

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THE CLINICAL USE OF SODIUM FLUORESCEIN AND RADIOACTIVE DIIODOFLUORESCEIN IN THE LOCALIZATION OF TUMORS OF THE CENTRAL NERVOUS SYSTEM

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FLUORESCEIN (resorcinolphthalein), a non-toxic acid chromogen dye, was injected intravenously in animals by Erlich[4] in 1882 to study the formation of fluid in the anterior chamber of the eye. In 1912, Kafka[10] injected sodium fluorescein subcutaneously in animals and found that it did not stain the brain or spinal cord but did stain all other tissues including the dura and choroid plexus. Schonfeld,[20] in 1925, also investigated the appearance of sodium fluorescein in the spinal fluid and found that when large doses (6 to 8 grams) are given by mouth, it passes in small quantity into the spinal fluid in some normal individuals but more often in patients with syphilis. Subsequently, Jervell[9] and Bonar and Bailey,[1] have suggested that the appearance of sodium fluorescein in the spinal fluid be used in the diagnosis of meningitis.

That the luminescent property of intravenous fluorescein can be observed on the body surface when examined under ultraviolet light was demonstrated by Lange and Wollheim.[11] Since 1942 a number of reports have appeared in the literature concerning the use of intravenous fluorescein to measure circulation time (arm to tongue) and to evaluate the adequacy of the circulation in an extremity.[5,12,13,19,20,21]

Moore and Campbell,[14] at the University of Minnesota, modified the test for evaluation of peripheral vascular disorders of the extremities by injecting the dye into the artery of the extremity to be tested.

Intravenous sodium fluorescein has also been used to determine the patency of circulation to strangulated viscera.[12,15]

Beginning in October, 1946, Moore[16] began intravenous injection of 5 c.c. of sodium fluorescein in patients operated upon for carcinoma of the stomach, with the thought that the tumor tissue might be differentially stained. At first, the dye was injected when the abdomen had been opened, and no difference in fluorescence of the tumor and surrounding tissues under a Woods lamp was noted. However, as the interval between the time of the intravenous injection of dye and exposure and examination of the tumor was increased, it was found that there was, at times, a good differential fluorescence. The optimum interval between injection and inspection under ultraviolet light appeared to be approximately three hours. However, many of these tumors of the gastrointestinal tract, as well as those of the breast or others parts of the body, did not retain the dye in increased amount. But when sodium fluorescein was injected intravenously in patients with tumors of the central nervous system, they almost invariably showed differential fluorescence when exposed under a Woods light approximately three hours later.[16]

This technique has been quite helpful in locat-

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ing subcortical brain tumors. In this clinic, it is the custom to avoid large openings in the dura when there is increased intracranial pressure, but after the tumor has been localized, a small opening is made directly over it, and all the tumor or a sufficient part of it is removed to release the dural tension. Then, if necessary, a more adequate opening in the dura is made. After making small openings for a brain needle at the suspected site, the needle is introduced and, with syringe, suction biopsies are obtained. These are examined under a Woods light in the operating room itself, and if they fluoresce it is immediately known that the tumor has been located.

It has been found convenient to have the room nurse hold the biopsy material under the Woods lamp so that the surgeon can examine the tissue and confirm the presence or absence of fluorescence without moving from his operating position. A faint fluorescence may be obtained from the edematous tissue in the immediate vicinity of the tumor but once this area is located it is not difficult by additional needle biopsies to determine the site of maximum fluorescence, which is found in the tumor. This procedure avoids the delay of waiting for microscopic sections where the needle biopsy cannot be grossly recognized as tumor; it checks all parts of the needle biopsy for tumor and thus enables the pathologist to make sections of only the more suggestive parts; and, finally, it may give a clue to the fact that one is in the vicinity of the tumor. This procedure has now been used in sixty-five cases, and in every case but one where the biopsy did fluoresce a tumor was proven to be present by microscopic examination. An absence of fluorescence is equally consistent.[17] Here also there was one case, an angiomatous meningioma, which did not fluoresce until it was washed free of blood.

The residual cavity remaining after the tumor has been removed can be inspected for tumor tissue by noting any unusually fluorescent areas. In several instances, infiltrating portions of tumor have been discovered by examination with the ultra violet lamp and subsequently removed, thus resulting in a more complete operation. Fluorescence does not differentiate the type of tumor, but in general more malignant lesions fluoresce most highly. In our experience, every kind of intracranial tumor exposed since we have used this method has shown fluorescence enough to distinguish the tumor from the surrounding brain tissue.

The reason for this differential fluorescence is not clear. That it is not due to greater vascularity is obvious from the fact that the maximum differential does not appear until some three hours after injection. That it is not entirely a disturbance in the so-called blood-brain-barrier would appear from the fact that some gastrointestinal and other tumors also show a similar differentiation. However, its consistency in tumors of the brain and spinal cord in contrast to its inconsistency elsewhere would suggest that the blood-brain-barrier was a most important factor.

Since the experiments of Goldmann,[8] many facts about the blood-brain-barrier have been discovered. Friedman and co-workers[6,7] have demonstrated that, as a rule, substances that are blocked by the barrier carry negative electrical charges. This is true for both dyes and toxins. Broman[2,3] appears to have demonstrated the barrier to be within the blood vessels (intima), because when he injected dye and then quickly washed it out, he found the vessels of the brain unstained, but elsewhere in the body they were stained. He also found the blood-brain-barrier more easily made permeable when noxious substances were applied to the intima by carotid injection than when applied from without by application of the injurious substance to the pia.

To what degree this differential staining of brain tumors after injection of sodium fluorescein is dependent upon a disturbance of the blood-brain-barrier by tumor will have to be determined by future investigation. We have not verified by biopsy any vascular lesion in man after injection of dye. Some experiments with vascular lesions and abscesses in animals are now in progress. One tuberculous granuloma of meninges exposed at operation did not fluoresce.

Since we have begun to use vital staining in brain surgery, reports by Sorsby et al[22] have come to our attention. They made a similar attempt to differentiate tumor tissues at operation by vital staining. They used Kiton green in a few cases, but with little success.

Since sodium fluorescein was so consistently taken up by tumors of the central nervous system, it seemed possible that by combining it with one of the heavier elements, or tagging it with a radioactive isotope, its clinical usefulness might be

extended as radio-opaque or radioactive substance.[18]

Diiodofluorescein and also tetraiodofluorescein were prepared and injected, but the differential opacity within brain tumors has not been sufficient to visualize tumors in roentgenograms.

Also, radioactive diiodofluorescein was prepared with iodine$_{131}$. Iodine$_{131}$ has the requisites of relatively rapid decay (half life eight days), and it has a penetrating gamma radiation which can be readily detected at a distance.

Approximately 1 mc. of iodine$_{131}$ is injected intravenously in the form of diiodofluorescein and two to four hours later counts are made over the head with a Geiger-Mueller counter. Differential staining with fluorescein was found to be best some two hours or more after injection of the dye, so also the counting rates do not reveal significant differences until a similar period has elapsed after injection of the dye.

Counts for two- to five-minute intervals are taken over various symmetrical areas of the skull, and the counting rates per minute for each area are compared for localization of the lesion.

The results obtained on twenty-six patients who were suspected of harboring brain tumors are available for evaluation of the procedure. Only those patients in whom a lesion was later demonstrated to be present or proven to be absent by operation, ventriculogram or angiogram are included.

Summary of the above twenty-six cases: eight tumors were correctly localized; two tumors were located close to but not exactly at the correct site; in six no focal lesions could be located and none was demonstrated by operation, ventriculogram or angiogram; seven tumors were incorrectly localized or missed; one tumor was localized only as to the proper hemisphere.

It is notable that three of the eight cases incorrectly located by Geiger counts were tumors of the posterior fossa where it would appear that the procedure is less accurate because there is a greater mass of tissue between the brain and Geiger-Mueller tube. This increases the distance and interposes tissue relatively high in radioactive iodine.

In nine cases another 0.1 mc. radioactive fluorescein was injected just before operation. During operation normal brain tissue and brain tumor tissue were removed, and beta ray counts were made from the surface of a piece of each equal in surface area and more than 3 mm. thick. These counts showed the tumor to contain from approximately two to twenty-nine times as much radiation as the brain tissue. But they probably are not as significant as they might be if it were always possible to obtain entirely satisfactory specimens for comparison. However, this has not been feasible. In some cases, at least, the brain tissue has been traumatized or deprived of its blood supply (which we have reason to believe causes it immediately to take up the dye). In some cases, a considerable time elapsed between the taking of the normal brain biopsy and the exposure of the tumor and removal of a portion of it for the test. Finally, the time interval after the injection of the dye to the taking of the specimens for estimation of radioactivity was not always best for maximal differentiation.

Discussion

The use of sodium fluorescein as an aid in the localization and diagnosis of brain tumors at operation is a simple and accurate technique. The method utilizes no special apparatus except a mercury vapor lamp, which can be obtained from one of several commercial concerns. It therefore can be carried out at any hospital in which neurosurgery is done.

The use of radiopaque dyes to outline tumors of the central nervous system has not been successful. However, calculations based upon phantom experiments indicate the feasibility of the method, if the proper dyes can be synthesized.

The clinical value of the use of radioactive dyes to detect brain tumors preoperatively is yet to be determined. Some of the limitations of the method are already known. "Benign" tumors, such as acoustic neuroma, fibrous meningiomas, and certain astrocytomas, do not take up enough dye to give a differential ratio of radiation large enough to be detected by the Geiger-Mueller counter. There is also a limit as to the size of tumor that can be detected. Tumors with a diameter of less than 3 cm. cannot be detected unless surrounded by an appreciable area of edema. It is hoped that improvements in the physical apparatus itself will result in greater accuracy.

It should be pointed out that radioactive diiodofluorescein cannot be used for therapy. The dye is concentrated and excreted largely by the

liver, and therefore irreparable damage would be incurred by the liver before the comparatively radioresistent brain tumors received a carcinolytic dosage.

Conclusion

Differential staining which makes it possible immediately to recognize even minute particles of tumor in biopsies has proven to be very valuable in locating subcortical tumors by needle biopsy, and it can be used to identify remaining fractions of tumor, but only when these are entirely free from overlying hemorrhage.

The localization of tumors by Geiger count is still uncertain. Our experience with this method is quite small, and we have not yet come to rely upon it for operation on otherwise unlocalized tumors. Improvements in apparatus and technique should make it more reliable.

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IS VET PROGRAM NUDGING US INTO SOCIAL MEDICINE?

A medical man who occasionally communicates his ideas to this department wonders if we may not be backing into socialized medicine through the government program of care for veterans. It's a touchy subject, he admits, but it is going to be increasingly difficult to keep under cover in the next few years. More than 80 per cent of the beds in veterans' hospitals in this area, our correspondent reports from personal check, are occupied by veterans whose disabilities can't be traced to their service in the armed forces.

As the law now stands, a veteran may go to a government hospital at any time for medical treatment or surgery. He is required to make a statement that he can't afford private medical care. But this requirement has become largely a matter of form, and the signer rarely is questioned as to his financial ability.

Demand for free service is so great that the veterans' medical program alone is costing the government currently some $400,000,000 a year. What it will cost when the majority of World War II vets arrive at the age when illness is to be expected can only be guessed. If we extend the same privilege to the new draftees, the total cost a decade hence could easily be in excess of two billions a year.

According to Veterans Administration figures, $5,000,000,000 has been spent on education and on-the-job training benefits since the GI bill was enacted in 1944. Another $3,000,000,000 has been paid to veterans as unemployment or self-employment allowances. Business, farm and housing loans now total $223,000,000.

Costly as this program has been, few Americans would have it otherwise. Moreover, the underlying premise all along has been that after the veteran is readjusted he will be a self-sufficient citizen, or at least as much so as the rest of us in this day and age. On the other hand, free medical service for life to millions of men who left the armed forces in good physical condition is stretching government's responsibility out of all semblance to reason. (The Round Table by W. J. Brons, *Chicago Journal of Commerce,* July 20, 1948).

MULTIPLE CARCINOMAS OF THE STOMACH AND CHOLEDOCHOLITHIASIS IN A PATIENT WITH PERNICIOUS ANEMIA

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STATISTICALLY, carcinoma of the stomach is the cause of more deaths than any other malignant disease. It is said that in the United States alone, more than 50,000 persons die annually from this cause.

The incidence of simultaneous multiple malignancies is small. In reports of large series of cases from different centers it varies from 3.34 to 4.7 per cent. Of 1,048 cases of multiple malignant lesions, reported by Warren and Gates, there were thirty-six cases of multiple carcinoma of the stomach, an incidence of 3.4 per cent. Brindley, Dockerty and Gray reported that in 1,184 cases of carcinoma of the stomach there were twenty-three (1.94 per cent) of multiple gastric carcinomas. In a recent study of eighty patients with intraoral epidermoid carcinoma, Slaughter found that 18 per cent had multiple independent primary tumors. Malignancies occurring in certain situations are more commonly multiple than those occurring in other organs. For example, Dockerty reminds us that papillary carcinoma of the ovary is bilateral in approximately 50 per cent of the cases and polypoid carcinoma of the colon presents multiple lesions in almost 40 per cent.

As previously indicated, multiple malignant lesions of the stomach are more rare. In February, 1946, Rickles reported a case with five primary cancerous lesions of the stomach, and he stated that in 1921 Owen reported a case with four primary malignancies of the stomach. In the case reported by Brindley, Dockerty and Gray there were four lesions in the stomach also.

In the case to be reported there were three distinct adenocarcinomas of the stomach. This case is of further interest in that the patient had pernicious anemia.

Case Report

A lawyer, aged sixty-one, was first seen in consultation with Dr. L. J. Kaasa on April 12, 1941. He complained of severe right upper quadrant abdominal pain associated with nausea and vomiting. He stated that about a year prior to that time he was jaundiced but had no pain. Since that time there had been several episodes of jaundice and some epigastric discomfort but no severe pain until March, 1941, when there was a severe attack of pain, a violent chill and subsequent jaundice. This pain did not radiate and was relieved by hypodermic administration of morphine sulphate. The present attack of pain was the most severe of any. The urine was colored and the patient had noticed that his skin was yellow.

Physical examination revealed a slender, tall, wiry, well-developed, well-preserved man. He was markedly jaundiced. Temperature was 99° F. The blood pressure 95 systolic and 65 diastolic. The abdomen was flat; the liver edge was palpable two fingers breadth below the costal margin, and it was tender. There was no rigidity, spasm or pronounced tenderness. Examination was otherwise essentially negative.

The patient stated that in 1930 a diagnosis of pernicious anemia was made at the Mayo Clinic. He remained at the clinic for ten weeks under treatment and since that time had taken liver irregularly. He had made it a practice to eat liver once a week, however, and when he felt that he was somewhat run down, he would report to his doctor for an injection of liver.

The family history was interesting in that the patient's mother died at the age of eighty-one years and his father died at the age of sixty-three years of Bright's disease.

After proper preparation, operation was performed. The gall bladder was found to be large, distended, subacutely inflamed and filled with stones. It was removed. The common duct was dilated to about three times its normal size, and a stone which measured 2 cm. in diameter was removed from the common duct. No other stones were found. A T-tube was placed in the common duct and the abdomen closed.

A choledochogram revealed great dilatation of the biliary tree but there was no deformity suggesting stones, and the dye entered the duodenum promptly. The patient insisted that the T-tube be removed. This was done about ten weeks following the operation, and the stab wound healed very promptly.

The patient was next seen in June, 1942. He stated that in May, 1942, he began to have some epigastric pain accompanied by nausea, vomiting, chills, fever and followed by jaundice. Since that time he had had two similar attacks.

Physical examination revealed essentially no change. The patient was markedly icteric. The heart and lungs were normal. The blood pressure was 105 systolic and 60 diastolic. There was some weakness in the upper right rectus scar and there was mild epigastric tenderness.

Laboratory examination revealed the urine to contain bile, but it was otherwise normal. The icterus

Read at the meeting of the staff of Naeve Hospital, Albert Lea, Minnesota, October 13, 1947.

index was 81. The erythrocytes numbered 3,620,000, the hemoglobin was 88 per cent (Dare), the leukocytes 37,000. The color index was 1.2. Examination of the blood smear revealed some anisocytosis and macrocytosis. Gastric analysis revealed the absence of free hydrochloric acid and a total acidity of 4 degrees.

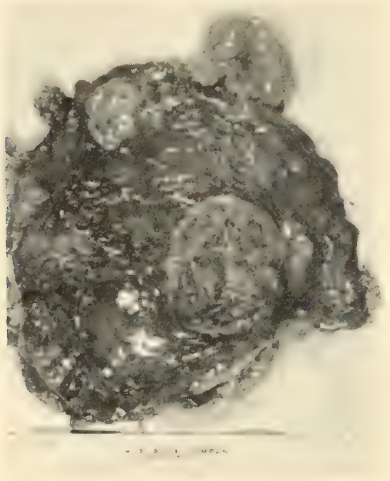


Fig. 1. Photograph of portion of stomach removed. There are three distinct adenocarcinomas.

The patient entered the hospital on August 30, 1942, after having had two more attacks of pain, nausea, vomiting, jaundice. There was no change of findings on physical examination.

Operation was performed on August 31, 1942. The abdomen was entered through the old upper right rectus scar. Exploration revealed a large carcinomatous lesion on the anterior wall of the stomach, the smaller lesion on the posterior wall of the stomach, and involvement of the glands in the gastrocolic omentum. No other evidence of extension was found. The common duct was enormously dilated so that it was at least an inch in diameter. It contained a large stone which was easily movable in the duct.

The common duct was incised and a stone measuring 2 cm. in diameter was removed. The duct was then thoroughly explored with scoops and no other stones found. A T-tube was sutured in the common duct.

The duodenum was mobilized and sectioned. The stump was inverted with two rows of sutures and buried in the head of the pancreas. About four-fifths of the stomach was removed, together with the gastrocolic omentum. A posterior Polya anastomosis was effected. Sulfanilamide powder was placed in the abdominal cavity and the wound closed in layers. The T-tube and two Penrose drains were brought out through a stab wound. A transfusion of 1,000 c.c. of whole blood was given during the operation.

The operative specimen consisted of a portion of stomach which measured 15 cm. along the lesser curvature and 24 cm. on the greater curvature. On the anterior wall there was an ulcerating lesion measuring 7 cm. in diameter, and on the posterior wall there was an ulcerating lesion measuring 3 cm. in diameter. Higher on the anterior wall there was a nodule which measured 2 cm. in diameter. One gland in the gastrocolic ligament was found to be involved. Microscopic examination of the four areas revealed them to be adenocarcinoma, Grade 4.

Convalescence was uncomplicated and the patient was dismissed from the hospital on September 20.

Choledochograms made on October 8, November 2, and December 21, 1942, revealed a dilated common bile duct but no evidence of deformity or stones. The dye entered the duodenum promptly and also made its appearance in the jejunum and in the stomach. On December 21 the T-tube was removed. The patient enjoyed good health for more than a year. During the author's absence in military service, the patient was examined elsewhere, and no evidence of metastasis or recurrence was found. During the latter part of 1943 he began to lose his appetite and began to lose weight. On January 24, 1944, he re-entered the hospital. Physical examination was essentially negative except for severe malnutrition. The urinalysis was negative. Hemoglobin was 95 per cent, and the leukocytes numbered 5,200. Occult blood was present in the stools. The patient failed gradually and died on February 23, 1944. Autopsy was not performed.

It is now generally accepted that in a large proportion of the cases of cancer of the stomach, achlorhydria is present, and that there is also a diminished volume of gastric secretion. The first communication concerning a derangement of gastric secretion associated with cancer of the stomach is attributed to Bird, who in 1842 drew attention to the lack of acid or to the small quantity of free acid in the vomitus of patients with gastric cancer. This observation stimulated further study.

Why is achlorhydria associated with cancer of the stomach? It has been suggested that the presence of the cancer interferes with the secretion, and others maintain that the carcinoma develops in a gastric mucous membrane which has been previously deranged. The evidence at hand seems to indicate that cancer of the stomach is prone to occur in those organs in which there have been chronic inflammatory changes, such as in a chronic atrophic gastritis. In pathologic studies of the gastric mucosa in stomachs affected by carcinoma, Judd, Orator, and others have found evidence of a diffuse, atrophic gastritis. To quote Rhoads, "It seems fair to assume that in certain instances gastritis is associated with cancer and, from the evidence previously discussed, that it precedes the neoplasm."

Pernicious anemia is recognized as a disease of the hematologic system characterized by pallor, weakness, anemia, macrocytosis, glossitis, and neurologic findings. The gastric mucosa is also invariably affected. According to Olson and Heck, Fenwick in 1877 first described the pathologic changes in the stomach associated with pernicious anemia. More recent studies by Brown, in the Boston City Hospital, and others, have firmly established the invariable association of gastritis with pernicious anemia.

Since gastritis is constantly associated with pernicious anemia and because of the frequent association of gastritis with carcinoma of the stomach, it seemed logical to think of gastritis as a possible etiological factor in the production of gastric cancer. Quincke first described a case of cancer of the stomach associated with pernicious anemia in 1876. Since that time many reports have appeared attesting to the high incidence of gastric neoplasm in individuals with pernicious anemia. Jenner, of Amsterdam, studied 181 cases of pernicious anemia and came to the conclusion that "there is vast difference in the incidence of carcinoma of the stomach in individuals with pernicious anemia and in the non-pernicious-anemia portion of the population." Cotti studied 107 patients with neoplasms associated with pernicious anemia and found that ninety-three (86 per cent) of the tumors were located in the stomach. Brown, in Boston, in 151 autopsies on patients dying with pernicious anemia, found that 8 per cent of the stomachs contained benign gastric tumors, neoplasms recognized as being precancerous. Schleicher, Sommers, and Ikeda have stated that about 10 per cent of their pernicious anemia patients develop carcinoma of the gastrointestinal tract. Rigler and Fink, in two large groups of cases of pernicious anemia, found the incidence of tumors of the stomach to be 7.8 per cent.

The conclusions of many clinicans, pathologists, and radiologists have been well summarized by Rigler and Fink and are as follows:

1. There is a distinct relationship between cancer of the stomach and pernicious anemia which is more than coincidental.

2. This relationship may well be on the basis of atrophic gastritis which is a predisposing factor to both diseases.

3. Carcinoma of the stomach should be suspected in patients with pernicious anemia if the slightest gastric symptoms are exhibited.

4. A routine radiographic examination of the gastro-intestinal tract of patients with pernicious anemia should be conducted semi-annually and has been found to be a fruitful procedure.

In summary, a patient with multiple carcinomas of the stomach, a rare condition, has been presented. The presence of a common duct stone was coincidental. This patient had well-established pernicious anemia of twelve years' duration.

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GASTRIC CARCINOMA: ITS ETIOLOGY, SYMPTOMS AND TREATMENT

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ONE of the penalties that we as a nation pay for an increased span of life is that more of us reach the "cancer" age. Statisticians tell us that by 1960 approximately 40 per cent of our population will be over forty-five years of age, and accordingly the annual death toll from carcinoma will be approximately 270,000.[7] In a recent article Sir Heneage Ogilvie[17] states that in England, cancer is the most frequent cause of death in men and women over the age of forty, while in this country, cancer stands next to cardiovascular disease as the chief cause of death in both males and females.

The problem of gastric cancer takes on enhanced significance in view of the above facts. Of all forms of cancer, gastric cancer is responsible for most deaths in males, and ranks second to carcinoma of the uterus as a cause of deaths in females. It is estimated that approximately 40,000 people will die from gastric carcinoma annually.[14] There can be no doubt that gastric carcinoma is a trying and grave issue that must be solved if any significant reduction in the number of "cancer deaths" is to become apparent.

Etiology of Gastric Cancer

The cause or causes of gastric cancer in man remain unknown. In pursuit of the problem of causation of gastric carcinoma, much valuable information has been uncovered. It is questionable whether gastric carcinoma ever arises on a perfectly normal gastric mucosa. Konjetzny[12] strongly maintained that chronic gastritis, particularly of the atrophic type, precedes all gastric carcinomas. However, the exact significance of gastritis, both as a clinical and pathological entity, is a sorely debated point. The careful studies of Hebbel[9] indicate that chronic gastritis occurs as commonly in people past middle life without accompanying gastric cancer, as in those with gastric malignancy.

Rigler and co-workers[11,18,20] have emphasized the frequent association of gastric carcinoma and pernicious anemia. They point out that gastric cancer is approximately ten times more frequent in patients with pernicious anemia than in the rest of the population. Magnus and Ungley[15] in this connection have described the marked atrophy of the stomach in pernicious anemia patients which, however, may disappear with adequate liver therapy. Despite the disappearance of the atrophic changes following liver therapy, some of these patients eventually develop gastric carcinoma.[8] Rodgers and Jones[21] noted the presence of superficial hemorrhagic erosions and ulcers on gastroscopic examination of patients with atrophic gastritis and idiopathic achlorhydria. These observations are of extreme importance, for the fate of these gastric erosions and ulcers should be followed carefully to see if any eventually become converted into carcinoma.

Achlorhydria and hypochlorhydria (less than 30° free acid) have long been known to accompany gastric cancer. The data of Hebbel and Gaviser[10] of our hospital reveal that 75 per cent of patients with gastric carcinoma are achlorhydric and an additional 18 per cent are hypochlorhydric after histamine stimulation. Whether achlorhydria and hypochlorhydria appear only after the gastric malignancy has developed, or whether achlorhydria and hypochlorhydria are present prior to the development of gastric carcinoma, has been answered in part by Comfort and co-workers[4] who have followed a large number of achlorhydric patients and have found that carcinoma is more likely to develop in this group than in patients who have normal gastric acidities.

Polyps of the stomach have also been indicted as precursors of gastric carcinoma by a number of authors (Borrmann,[2] Schindler,[23] Rigler and Fink[19]). Spriggs and Marxer,[24] however, after careful study of a number of patients with gastric polyp, point out that it is difficult to evaluate the actual fate of a gastric polyp in any given instance. In our clinic we have observed one patient, after a subtotal gastric resection for a benign polyp of the stomach, who returned four years later with an inoperable carcinoma arising from the residual pouch.

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The relationship between gastric ulcer and gastric carcinoma is a disputed one. That malignant transformation of a gastric ulcer may occur is denied by no one, but there is considerable debate concerning the incidence of this transformation. McCarty[16] of the Mayo Clinic reports the frequent presence of malignant degeneration in gastric ulcers—a finding which he has not observed in duodenal ulcers. Most pathologists[3] feel, however, that the incidence of malignant degeneration of a benign gastric ulcer is approximately 3 to 5 per cent. Very frequently, painstaking examination of multiple sections of an ulcer must be done before a focal area of malignancy is uncovered. The problem of mistaking a gastric carcinoma for a benign ulcer, or vice versa, is a more pressing one. Particularly so is this for ulcers occurring in the prepyloric area. Sampson and Sosman[22] have found that approximately 75 per cent of prepyloric ulcers are malignant. The roentgenologist must bear in mind the importance of his interpretations in regard to gastric ulcer and carcinoma. He should make it clearly understood that in many instances it is impossible to differentiate between the two and if his report includes "gastric carcinoma cannot be ruled out," he will do a great deal towards preventing an unnecessary delay in the treatment of the patient.

The role played by heredity in the genesis of gastric carcinoma is not well understood. Data obtained[26] from family histories of patients with carcinoma of the stomach (Tables I and II) indicate that gastric cancer occurs more frequently in relatives of patients with gastric carcinoma than in relatives of patients treated at the University Hospitals for noncancerous gall-bladder disease, carcinoma of the colon and rectum, hemorrhoids and hernia. This difference is slight and, when subjected to statistical analysis, it is not significant. If further study reveals that these small differences continue to appear consistently in the series to be studied, they may be of some significance, although it must be borne in mind that patients with cancer of the stomach are probably more likely to be aware of the same disease in other members of the family than would patients who do not have gastric carcinoma. Denk[6] has also shown that gastric cancer appears to be more frequent in the relatives of patients with gastric cancer than in relatives of individuals of similar age groups not having gastric carcinoma. Age and sex play unexplained determinant roles apparently in the genesis of gastric cancer. From 85 to 95 per cent of gastric carcinoma occurs after the age of forty. The proportion of males to females is approximately three to two.[1]

TABLE I. INCIDENCE OF CANCER IN FAMILIES OF PATIENTS WITH GASTRIC CANCER

	Number of Families	Incomplete Information	Number of Families with Carcinoma of the Stomach	Number of Families with Carcinoma Elsewhere
Carcinoma of Stomach	200	13	29 (15.6%) (36 individuals)	30 (16%) (43 individuals)
Gall-bladder Disease (noncancerous)	200	12	20 (10%) (22 individuals)	31 (16%) (39 individuals)
Carcinoma of Colon and Rectum	200	31	16 (9.4%) (19 individuals)	36 (21.3%) (64 individuals) 8% with ca. of colon
Hemorrhoids	200	13	22 (12%) (24 individuals)	33 (17.6%) (39 individuals)

TABLE II

	Number of Relatives		Number of Relatives with Carcinoma of the Stomach
	Under 45	Over 45	(% Relatives Over 45)
Carcinoma of the Stomach	888	827	16 (1.90%)
Gall-bladder Disease	318	337	3 (0.89%)
Hernia	467	281	2 (0.79%)

Diagnosis of Gastric Cancer

The usual textbook picture of severe weight loss, anorexia, hematemesis, and persistent epigastric pain depicts the late stages of the disease. It cannot be overemphasized or repeated too often, that carcinoma of the stomach in the early stages is a *silent* disease. A celebrated American radi-

ologist and two famous surgeons, who did so much to emphasize means of diagnosis and treatment of gastric malignancy, died of gastric cancer, and in each instance the diagnosis was made at a late stage by the accidental discovery of an epigastric mass. These individuals who were so well aware of the possibility of development of gastric carcinoma in others were lulled into a false state of security because they had no symptoms. Little good and, in fact, serious harm results from perpetuating the teachings that well-defined symptoms are associated with gastric carcinoma. To emphasize that the symptoms may be vague and readily overlooked in the early stages of the disease rectifies the instructions only partly. Until the fact that complete and utter lack of symptoms is characteristic of early gastric cancer is driven home to the medical profession and the "lay public," little improvement is to be expected in the end results of the present mode of therapy in cancer of the stomach.

Exactly how long gastric cancer may remain silent is not known, but from experience obtained in cases where subtotal gastric resections have been done and where malignant cells have been left in the proximal line of resection, it appears that carcinoma of the stomach is a slow-growing lesion. These patients have been free of symptoms after operation, even though viable tumor cells have been left in the residual gastric pouch, for approximately eighteen months. It is thus apparent that if *early* diagnosis of cancer of the stomach is to be made, then patients who harbor the disease and who are completely asymptomatic must be uncovered. Such a study to determine patients who might develop gastric carcinoma, or who already had it but in the early asymptomatic stage, was undertaken in this clinic in July of 1945.[26]

TABLE III. INCIDENCE OF ACHLORHYDRIA AND HYPOCHLORHYDRIA IN PATIENTS OF AGE GROUPS ELIGIBLE FOR PRECURSOR GASTRIC CANCER STUDY

No.	Gastric Expression	Achlorhydrics (Histamine)			Hypochlorhydrics
		Triple G. I. Series	Double G. I. Series	Single G. I. Series	No. G. I. Series
Out-Patient Registrations 3805	2118 (1292 male) (826 female)	370 527 (241 male) (129 female)	153 154 (83 male) (70 female)	180 141 (102 male) (78 female)	54 34 (33 male) (21 female)

TABLE IV. RESULTS OF GASTROINTESTINAL SERIES IN PRECURSOR GROUPS

Precursor Groups	Number of Gastrointestinal Series	Findings	
		Polyps of Stomach	Carcinoma of Stomach
Achlorhydrics	936	29	3*
Hypochlorhydrics	34		
Pernicious Anemia	113	4	2
Relatives of patients with Gastric Cancer	43		
Patients with Occult Blood in the feces	64		
Patients with hemoglobin level of 11.0 grams or less	28		
Total	1218	33	5

*2 additional carcinomas missed through organizational errors.

The following groups were subjected to gastric roentgenograms at six-month intervals: (a) patients over the age of fifty* and free of digestive complaints, with achlorhydria and hypochlorhydria (less than 30° free acid) after histamine stimulation; (b) patients with gastric polyps; (c) patients with pernicious anemia; (d) patients with an unexplained hemoglobin level of 11.0 grams or lower; (e) patients with occult blood in the stool; and (f) relatives of patients with gastric carcinoma.

The results of this study from July 1, 1945, to October 1, 1947, are summarized in Tables III and IV.

The need for developing some workable plan for filtering off those cases most likely to harbor a gastric malignancy was additionally substantiated by the studies of St. John, Swenson, and Harvey,[27] and of Dailey and Miller.[5] The former investigators subjected 2,413 patients over the age of fifty, without gastric complaints, to a brief fluoroscopic examination of the stomach after the ingestion of barium. In this group of patients, two silent gastric cancers and one lymphosarcoma were found, an incidence of unsuspected gastric malignancy of 1.24 per thousand

*Prior to January 1, 1946, the age level for male patients was fifty-five years, and for female patients, sixty-five years.

patients. No gastric polyps were encountered by the Columbia group. Dailey and Miller reported a series of 500 patients subjected to barium examinations of the stomach. These examinations were performed on presumably normal men over the age of forty-five years, free from digestive complaints. Three gastric lesions were found: a benign gastric ulcer, a polyp, and antral gastritis in a third patient. In our study, limiting gastric roentgenograms to the above listed "precursor" groups, an effective filter has been interposed. For, of the 1218 roentgenograms in 752 individuals, five unsuspected gastric carcinomas and thirty-three gastric polyps have been found. The yield from such a study can be expected to increase with time, for it is our belief that a number of these patients who do not have gastric carcinoma at the time of the first examination may well develop this lesion, which will be found when repeat examinations at six-month intervals are done.

The results of this pilot study have been encouraging, and until some simple biological test for cancer becomes available, we feel that the regular examination at six-month intervals of apparently well individuals over the age of forty-five, such as could be accomplished at a cancer detection center, will uncover many early gastric cancers as well as early carcinomas and precancerous lesions of other organs.

Therapy of Gastric Carcinoma

The only effective mode of therapy available at present is gastric resection. If there has been any encouraging progress made in the problem of gastric carcinoma in the last twenty-five years, it has been in the field of operative attack. Through better preoperative preparation of patients, better anesthesia, adequate and timely replacement of blood loss at operation, the advent of antibiotics (particularly penicillin), and a better understanding of the postoperative fluid requirements of the patients, gastric resection is being accomplished successfully in many more patients than formerly.

At this clinic partial gastric resection is done through a left subcostal incision. Care is taken to remove the gastrocolic ligament, the greater omentum, and particularly the gastrohepatic ligament. The entire lesser curvature portion as well as the lymph nodes at the origin of the left gastric artery are excised. Wide removal of the stomach beyond the visible and palpable limits of the carcinoma is carried out, for there may be submucosal spread of a carcinoma for long distances beyond the confines of the tumor. Frozen sections and microscopic examination of the tissues of the proximal and distal lines of resection are done to determine if the surgeon is beyond the carcinoma. A 6 cm. aseptic "one-row" anastomosis between the gastric pouch and first portion of the jejunum or third portion of the duodenum, using interrupted silk sutures as described by Wangensteen,[28] is then accomplished. The ever-increasing aggressive attitude of the surgeons at this clinic has resulted in an increasing number of gastric resections with simultaneous excision of adjacent viscera (pancreas, colon, mesocolon, spleen, diaphragm, kidney, et cetera) as well as an increasing number of total gastric resections accomplished either through an abdominal or combined abdomino-thoracic approach.

TABLE V. OPERATIVE PROCEDURE AND OPERATIVE MORTALITY IN GASTRIC CARCINOMA

	Number of Patients	Per Cent of Total	Operative Mortality %
Patients with No Operations	138	23.7	
Laparotomy only	85	14.5	8.2
Palliative Procedures			
(a) Gastric Enterostomy	25	4.3	24.0
(b) Enterostomy	30	5.1	13.4
Resections			
(a) Partial	276	47.1	15.2
(b) Total	31	5.1	30.0
(c) All type	307	52.2	16.6
Total Operations	447	76.3	17.9

Recently the results of surgical therapy in gastric carcinoma at the University of Minnesota Hospitals over a ten-year period (1936 to 1945) have been reviewed.[25] The total number of patients in this group seen at the University of Minnesota Hospitals over the ten-year period was 586. Of these, 432 were men and 154 women. The average age of the patients was 63.2 years. Of this group, nineteen patients were in the terminal stages of their disease when first seen, so that surgical therapy was not feasible, but they are included for statistical purposes. Four hundred and forty-seven patients were operated upon, an operability rate of 76.3 per cent (Table V). In this group of 447 patients, eighty-five (14.5 per cent) had laparotomies only, twenty-five (4.3 per cent) had gastrojejunostomies, and thirty (5.1 per cent) had enterostomies. Three hundred and seven patients

TABLE VI. CAUSES OF DEATH FOLLOWING GASTRECTOMY (ALL TYPES)*

Peritonitis	28
Pulmonary Complication	8
Cardiac Failures	4
Renal Complications	3
Pulmonary Embolism	2
Cerebrovascular Accident	1
Shock	1
Undetermined	4
Total	51

*Forty-four autopsies obtained.

underwent gastric resection, a resectability rate of 52.2 per cent. In this group there were thirty-one total gastric resections and 276 partial resections. The resectability rate based on the total number of patients studied was 52.2 per cent, but when determined on the basis of those subjected to laparotomy (447), it was 68 per cent.

Postoperative Mortality

Among the patients with gastric resection (307) there were fifty-one deaths, a mortality rate of 16.6 per cent (Table V). There were 276 partial gastric resections with an operative mortality of 15.2 per cent and thirty-one total gastric resections with an operative mortality of 30 per cent. The gastric resections were not subdivided into simple and complicated cases for this report. However, in 65 per cent of all resected cases there were metastases to the regional lymph node and/or extension of the carcinoma to other organs, necessitating extensive surgical procedures.

Those operative procedures, which were purely palliative, carried with them a not insignificant mortality. There were eighty-five laparotomies performed with a mortality rate of 8.2 per cent, twenty-five gastrojejunostomies with a mortality rate of 24 per cent and thirty enterostomies with a mortality rate of 13.4 per cent.

Of the fifty-one deaths after gastric resection, it was possible to obtain autopsies in forty-four of these cases. The major cause of death (Table VI) was peritonitis, which accounted for twenty-eight fatalities. Eight patients succumbed to pulmonary complications (atelectasis and pneumonia); four died of cardiac failure, three of renal complications, two of pulmonary embolism, one of cerebrovascular accident, and one of shock; in four cases the cause of death was undetermined. Most cases of peritonitis appeared before 1940, when the closed method of gastric resection was not routinely used. Since the routine use of the closed method of gastric resection and anastomosis, peritonitis has been infrequent indeed after simple gastric resection. The majority of the instances of peritonitis occurred after total gastrectomy or after complicated gastric resections which necessitated simultaneous excision of adjacent organs such as liver, pancreas and the colon.

Fate of Patients Surviving Gastric Resection

It was possible to determine the fate of each of the 307 patients subjected to gastric resection.† Two hundred and fifty-six patients survived operation, but it is only those patients operated on prior to 1943 that one can speak of as "three-year cures," and only those patients operated on prior to 1942 can be considered "five-year cures." Table IV indicates the number of patients who survived for three years after gastric resection in the years of 1936 to 1943. The percentage based on the total number of patients seen (447) was 10.7, but based on the number of those subjected to gastric resection (213) the percentage of three-year survivors reaches 29.4 per cent. In all, forty-seven patients survived three years, twenty-two patients survived five years, making 6.6 per cent of all patients seen (328), but if calculated on the basis of patients surviving gastric resection (102), the percentage of five-year survivors becomes 21.5.

The operability and resectability during the ten years of study have increased steadily, while the mortality has decreased. In 1936 the operability and resectability rates were 57 per cent and 28 per cent, whereas in 1945 these rates were respectively 88 and 80 per cent. The resectability rate for 1945 based on the number of patients explored was 89.7 per cent. The mortality rate for partial gastric resection in 1936 was 25 per cent, while in 1945 it was 4.9 per cent, which figure includes both total and subtotal gastrectomy. This aggressive attitude toward gastric resection has yielded greater return, for in 1936, of fifty-eight patients, only ten (16.7 per cent) left the hospital, whereas in 1945, of seventy-eight patients, fifty-eight (82.8 per cent) left the hospital with a chance for cure or worthwhile palliation.

A critical analysis of operative procedures

†We are indebted to referring physicians and members of the Department of Vital Statistics of the Minnesota State Public Health Department who aided us greatly in our follow-up of patients.

points quite clearly to the fact that only gastric resection offers any significant periods of palliation. After gastroenterostomy the average survival was 5.4 months. With enterostomy the survival period averaged 3.5 months. When gastric resection is done, even though a cure was precluded because of the extent of the disease or metastasis to regional nodes, the patients survived on an average of 22.4 months. Even in the presence of liver metastasis (provided they were not too extensive), the average number of months of palliation averaged approximately fifteen.

TABLE VII. SURVIVAL OF PATIENTS OPERATED ON IN THE YEARS 1936 TO 1943 INCLUSIVE

Year	Total Number of Patients	Number of Gastric Resections	A			B		
			Patients Surviving 3 Years		% of Those Surviving Gastrectomy	Patients Surviving 5 Years		% of Those Surviving Gastrectomy
			No.	%		No.	%	
1936	58	16	4	7.0	40.0	1	1.7	10.0
1937	47	17	5	10.0	45.0	4	8.5	30.7
1938	48	13	3	7.0	30.0	2	4.2	22.2
1939	47	20	3	6.0	23.0	3	6.4	23.1
1940	65	42	9	14.0	27.0	5	7.7	14.2
1941	63	28	7	11.0	44.0	7	11.1	3.3
1942	52	34	7	13.0	25.0			
1943	67	43	9	14.0	26.0			
Total	447	213	49	10.7	29.4	22	6.6	21.5

Summary and Conclusion

1. Carcinoma of the stomach assumes an important role in the over-all problem of malignancy, for it is responsible for approximately 40,000 deaths annually. As the age of the population continues to increase, the number of patients dying from this disease will also increase.

2. Little is known about the causes of carcinoma of the stomach in man. The relationship of atrophic gastritis, pernicious anemia, achlorhydria and hypochlorhydria, gastric polyp, gastric ulcer and heredity to the genesis of gastric carcinoma has been discussed.

3. Gastric cancer in its early stages is a silent disease. Well-developed symptoms usually appear only after the carcinoma has grown extensively.

4. Gastric carcinoma is apparently a slowly growing lesion, for patients with tumor in the residual gastric pouch after partial gastric resection are usually free of symptoms for approximately eighteen months.

5. In an effort to diagnose gastric cancer in its early silent form, the following groups of individuals over the age of fifty years were studied: (1) patients with achlorhydria and hypochlorhydria (less than 30° free acid) after histamine stimulation; (2) patients with gastric polyps; (3) patients with pernicious anemia; (4) patients with unexplained hemoglobin level of 11.0 grams or lower; (5) patients with occult blood in the stool; and (6) relatives of patients with gastric carcinoma. To date, 752 patients falling into these groups have had 1218 roentgenograms with the discovery of five silent gastric carcinomas and thirty-three polyps. These findings are sufficiently encouraging, it is felt, to warrant the establishment of a cancer detection center, where the patients will be investigated for all forms of silent visceral cancer, including gastric cancer.

6. The only effective mode of therapy of gastric cancer at present is gastric resection. Details of the type of gastric resection done at this clinic are described and discussed. Over a ten-year period (1936 to 1945 inclusive) 586 patients with gastric carcinoma have been seen at the University Hospitals. Nineteen of these patients were terminal when first seen, and no therapy was possible for these individuals. Four hundred and forty-seven patients were operated upon, an operability rate of 76.3 per cent. Three hundred and seven patients underwent gastric resection, for a resectability rate of 52.2 per cent. In this group there were thirty-one total gastric resections, and 276 partial resections. The previous highest resectability rate was 44.6 per cent, reported by Lahey.[13]

7. The mortality rate for all gastric resections was 16.6 per cent. For partial resections it was 15.2 per cent and for total gastric resections it was 30 per cent.

8. The chief causes of death postoperatively were, in order of frequency, peritonitis, pulmonary complications, cardiac failure, renal com-

plications, and pulmonary embolus. In four instances, the cause of death was undertermined.

9. Because sufficient time has not elapsed, the percentage of patients surviving three and five years can only be determined in relation to those patients operated on in the periods 1936 to 1943, and 1936 to 1941 respectively. The percentage of patients surviving three years after gastrectomy was 10.7 per cent, but based on the number of patients subjected to gastric resection, it was 29.4 per cent. The percentage of patients surviving five years was 6.6 per cent, but determined on the basis of the number of patients surviving gastric resection, it was 21.5 per cent.

10. Gastric resection was the only palliative procedure of value. The average number of months of palliation following gastric resection was approximately twenty-two.

11. The operability and resectability during the ten years of study have increased steadily, while the mortality has decreased markedly. In 1936 the operability and resectability rates were 57 per cent and 28 per cent, whereas in 1945 these rates were, respectively, 88 and 80 per cent. The resectability rate was 89.7 per cent, based on the number of patients explored in 1945. The mortality rate for partial gastric resection in 1936 was 25 per cent, while in 1945 it was 4.9 per cent, which figure includes both total and subtotal gastrectomy.

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FATAL ACCIDENTAL POISONING

Fewer accidental deaths have been recorded in recent years from virtually every type of poison-containing compound with the notable exception of the barbiturates, which now are far and away the leading cause of fatal accidental poisonings. In 1946 barbituric acid and its derivatives accounted for more than a quarter of all fatal accidental poisonings in the United States; in the early 1930's their share was only about 1/18 of the total. The pattern of accidental poisonings in the United States has undergone other marked changes over the years. Nux vomica and strychnine, which as recently as the late 1930's were charged with the loss of about 100 lives annually, took only 45 lives in 1946. Bichloride of mercury is another of the classical poisons that is causing fewer deaths now than formerly. Wood and denatured alcohol, which two decades ago exacted a death toll far greater than any other class of poisons, is now second in importance, taking 139 lives in 1946 as compared with 436 for the barbiturates.—*Bulletin, Metropolitan Life Insurance Company,* August, 1948.

PITFALLS IN THE EARLY DIAGNOSIS OF CARCINOMA OF THE LUNG

C. ALLEN GOOD, M.D.

Rochester, Minnesota

ACCORDING to statistics in the *Minnesota Cancer Bulletin*,[6] carcinoma of the lung causes about 6 per cent of all deaths due to malignant disease. Ten per cent of all deaths due to cancer in men are attributable to pulmonary carcinoma. Of the malignant lesions causing death in men it is the equal of cancer of the prostate and second only to cancer of the stomach. In some clinics carcinoma of the lung outranks all other forms of malignant disease as a cause of death in men.

At present the only effective therapeutic measure against carcinoma of the lung is surgical removal. Surgery offers about the same promise of cure of carcinoma of the lung as it does in carcinoma of the stomach. It is said that about a fourth of all carcinomas of the stomach can be removed when first encountered. If the lesion is removed, about a fourth of the patients live five years or more.[5] This means that six or seven of every 100 patients suffering from carcinoma of the stomach have a chance to be alive five years later. Recently Ochsner, DeBakey and Dixon reviewed their experience with resection for pulmonary carcinoma. About a third of the patients suffering from malignant disease of the lung who consulted them underwent resection. About a fourth of these survived at least five years. Their figures indicate that eight of every 100 patients suffering from carcinoma of the lung have a chance to live five years or more.

These same workers showed conclusively that the chances of survival after surgical extirpation of a bronchogenic carcinoma are much greater if the disease is localized. No patient in their series survived longer than three years after surgical extirpation if the disease had extended beyond the lung, either by encroachment on neighboring structures or by regional metastasis. On the other hand, more than half of their patients whose malignant lesions were localized lived three or more years after resection.

The results of surgical treatment of malignant disease of the lung can be improved by earlier diagnosis. Ochsner, DeBakey and Dixon concluded:

> "Every calculation, regardless of the standpoint from which it is made, indicates that while the patient's chances of survival are influenced by the type of care he receives, the important consideration is that he is seen early, so that complete removal of his lesion is possible and can be achieved without undue risk at operation. . . . The key to early diagnosis is the recollection of the possibility of the disease in all patients with symptoms referable to the chest, particularly those over forty years of age. Routine roentgenologic examination is the most valuable of all diagnostic methods. It should be supplemented as indicated by bronchography, bronchoscopy and biopsy, examination of expectorated material or of material aspirated at bronchoscopy, and, if the diagnosis cannot otherwise be arrived at, by exploratory thoracotomy."

Because so much depends on early diagnosis of carcinoma of the lung it behooves all physicians to be aware of the pitfalls which can delay early recognition of a pulmonary carcinoma. Some of these pitfalls stem from the fact that bronchogenic carcinoma can imitate the roentgenologic appearance of many benign pulmonary lesions. Because of the roentgenologic findings in cases of this type the possibility of carcinoma either is not considered or is dismissed by the consulting physician. It is the purpose of this paper to point out three of the ways in which carcinoma of the lung may masquerade as a benign lesion.

Carcinoma Simulating Benign Tumor

When bronchogenic carcinoma arises in the peripheral portion of the lung, it may grow without involving a major bronchus. For this reason the usual symptoms of cough and hemoptysis may not appear for many months. A malignant lesion of this type is seen on the roentgenogram as a single circumscribed mass. The size of the mass depends on the age and rapidity of growth of the lesion. The smaller the nodule is when first encountered the more likely it is to be considered benign by both roentgenologist and consulting physician. The prognosis following re-

From the Section on Roentgenology, Mayo Clinic, Rochester, Minnesota.

Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, June 7, 1948.

moval of such a lesion is usually very favorable, yet, a course of watchful waiting is frequently advised instead of operation.

Seventy-four per cent of fifty-three single scribed mass in the lung is malignant far outweighs the risk of exploration. Add to this the fact that most of the benign lesions encountered in this type of case are best treated by surgical

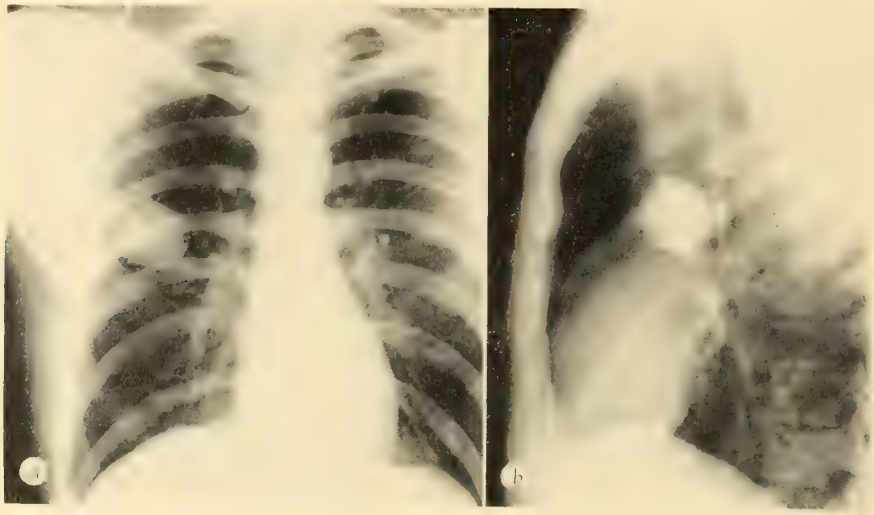


Fig. 1 (Case 1). Round mass in right upper lobe which proved to be hamartoma; *a*, anteroposterior; *b*, lateral view.

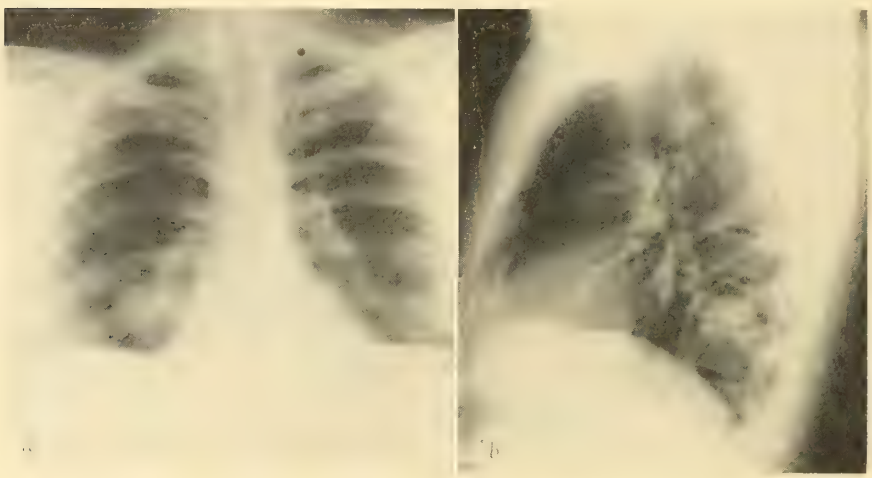


Fig. 2 (Case 2). Round mass in right lower lobe which proved to be a carcinoma; *a*, anteroposterior; *b*, lateral view.

nodular pulmonary lesions proved to be malignant when exploratory operation was performed by Clagett after all other means of diagnosis had been exhausted.[2] On the other hand, the risk of exploratory thoracotomy is less than 1 per cent in the hands of competent thoracic surgeons. Certainly, if the tumor has eluded diagnosis by all other means, the chance that a single circumextirpation and the arguments in favor of immediate exploration far outweigh those in favor of watchful waiting.

Case 1.—A man, thirty-four years old, was rejected by the Army in 1944 because of a shadow seen in the roentgenogram of the lungs made at the time of his examination for induction. The roentgenologic examination was repeated at intervals subsequently and in

December, 1945, he was told that the shadow had grown larger (Fig. 1 *a* and *b*). Although he had no symptoms referable to the respiratory system he was operated on. The right upper lobe was removed and a benign hamartoma was found.

Case 2.—A man, thirty-four years old, was rejected by the Army in 1944 because of a shadow seen on the roentgenogram of the lungs made at the time of his examination for induction. The roentgenologic examination was repeated at intervals subsequently and sometime in 1945 he was told that the shadow had grown larger (Fig. 2 *a* and *b*). He had recently experienced pain in the chest and had expectorated some blood-streaked sputum. He was operated on and right lower lobectomy was performed. In the right lower lobe of the lung was found an adenocarcinoma of the bronchogenic variety.

Cases 1 and 2 illustrate the difficulty experienced by the roentgenologist in distinguishing a carcinoma from a benign tumor. Both men were the same age. Both tumors were discovered at the time of examination for induction into the Army and both showed evidence of growth on subsequent roentgenograms. The only point of difference was the fact that the patient who harbored the carcinoma had symptoms referable to the respiratory system while the other patient had none.

Carcinoma Simulating a Pulmonary Abscess

Sometimes a carcinoma in the peripheral portion of the lung undergoes necrosis or an abscess cavity forms in the lung behind a malignant lesion which obstructs a bronchus. In either instance the roentgenologic picture may imitate that of pulmonary abscess. In such a case the malignant nature of the lesion may be overlooked while conservative measures are employed in treatment. Valuable time is lost in waiting for the cure which will not follow.

It is difficult to formulate a hard and fast rule of procedure for cases of this sort. Conservative measures have a place in the treatment of pulmonary abscess, although there is a growing tendency on the part of thoracic surgeons to consider an open type of operation or lobectomy as the treatment of choice. The fact that carcinoma of the lung may masquerade as a pulmonary abscess must always be kept in mind. Graham and associates stated that "about 10 per cent of the cases of chronic lung abscess in the adult have been associated with a carcinoma of the lung or bronchus." In a series of 165 cases of pulmonary carcinoma reported by Overholt 8 per cent were thought to be cases of pulmonary abscess when first seen. Certainly all physicians should maintain a high degree of suspicion for all chronic cavitating lesions of the lung encountered in adult patients. All possible diagnostic procedures should be employed in an endeavor to uncover the exact nature of the lesion. Study of the bronchial secretions, bronchoscopy with biopsy and even exploratory thoracotomy are to be recommended.

Too much emphasis should not be placed on the thickness of the wall of the abscess, the presence or absence of surrounding pneumonitis or other roentgenologic features, for it has been found that none of these are truly indicative of the benignancy or malignancy of the lesion. Neither should negative findings from analysis of the sputum or from bronchoscopic examination be taken to indicate a benign process.

Case 3.—A man, fifty-three years old, was first seen at the Mayo Clinic in 1944 because of asthma. A roentgenogram of the chest at that time showed no evidence of disease. He returned three years later because he had suffered from hemoptysis, pain in the chest and loss of weight. A lesion had been found in the right lung by means of the roentgenologic examination (Fig. 3 *a* and *b*). Examination of the sputum disclosed no malignant cells. Pus was seen in the bronchus of the right upper lobe at the time of bronchoscopy, but no tumor was noted. The patient was operated on and a chronic pulmonary abscess was found in the right upper lobe of the lung. Open drainage was established.

Case 4.—A man, fifty-one years old, had suffered from asthma for ten years. For three months he had experienced pain in the chest and had expectorated bloody sputum. Roentgenograms of the chest showed a lesion in the right lower lobe (Fig. 4 *a* and *b*). Bronchoscopic examination was done and tissue removed from the bronchus to the right lower lobe was said by the pathologist to show squamous cell epithelioma. Surgical exploration was performed, but the lesion proved to be inoperable.

Cases 3 and 4 illustrate the frequent impossibility of distinguishing roentgenologically between a cavitating carcinoma and a lung abscess. Both patients had suffered from asthma for several years. Both had experienced recent attacks of pain and hemoptysis. Because the lesion was accessible to the bronchoscopist in the case of the carcinoma a diagnosis was possible before sur-

gical exploration. If it had been situated in a part of the lung in which it could not be reached bronchoscopically, surgical intervention would have been necessary to establish the diagnosis, are administered, the patient may respond rapidly, sometimes even may appear cured subjectively. The proper diagnosis in such cases will be overlooked if the physician fails to order a

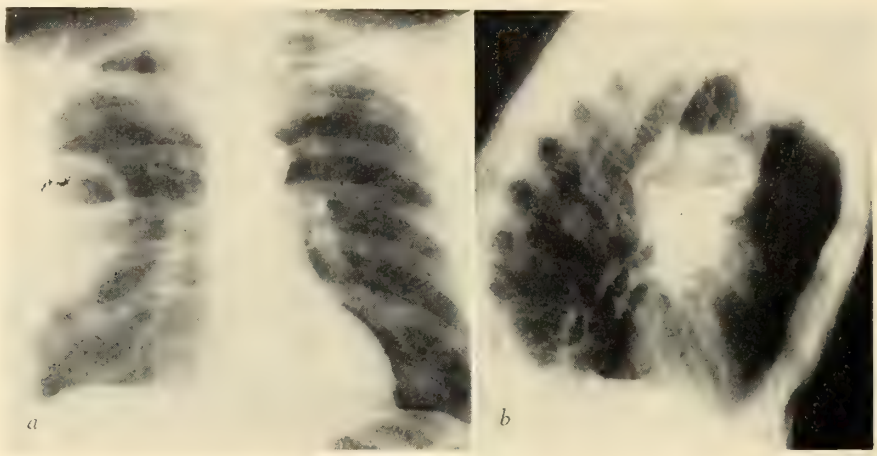


Fig. 3 (Case 3). Cavitating lesion with fluid level which proved to be a chronic pulmonary abscess; *a*, anteroposterior; *b*, lateral view.

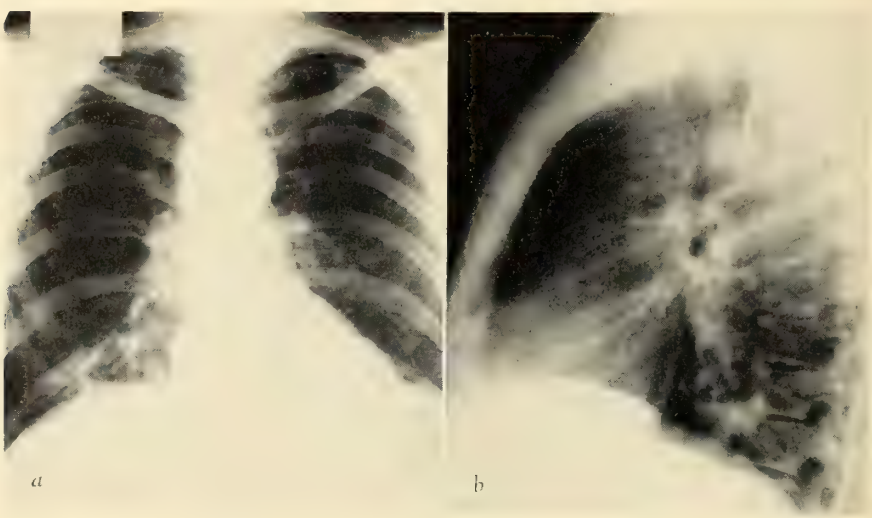


Fig. 4 (Case 4). Cavitating lesion with fluid level which proved to be a carcinoma; *a*, anteroposterior; *b*, lateral view.

just as it was in the case of the pulmonary abscess.

Carcinoma Simulating Pneumonia

Many pulmonary carcinomas develop in the major bronchi and cause bronchial obstruction. Often it happens that the onset of symptoms coincides with the development of this obstruction. In these cases the history, physical findings and roentgenologic features may mimic those of pneumonia. If penicillin or other antibiotic agents follow-up roentgenogram. Not until the next attack of bronchial obstruction occurs or until other signs appear which necessitate revaluation of the diagnosis will the exact nature of the disease be suspected.

If carcinoma is the underlying cause of the patient's illness, the roentgenologic appearance of the lungs will not return to normal, no matter how good the response to therapy. In order to be on the safe side no adult patient who has suffered from an attack of what appears to be

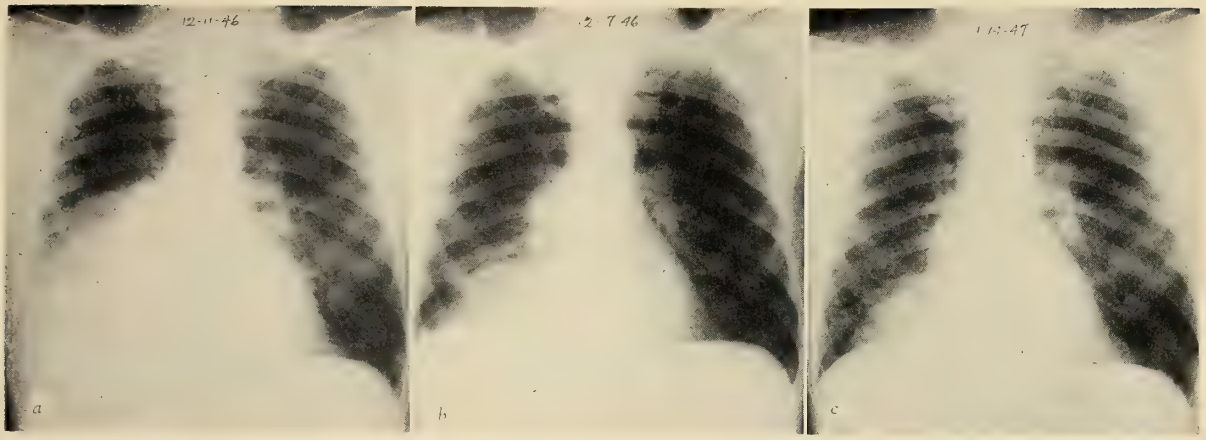


Fig. 5 (Case 5). *a*, Lesion of right lower lobe which was thought to be pneumonia; *b*, same lesion a week later after patient had received penicillin. The lesion appears to be less extensive, as though it were improving; *c*, five weeks after *a* the lesion is still present. It proved to be a carcinoma at the junction of the bronchi to the right middle and lower lobes.

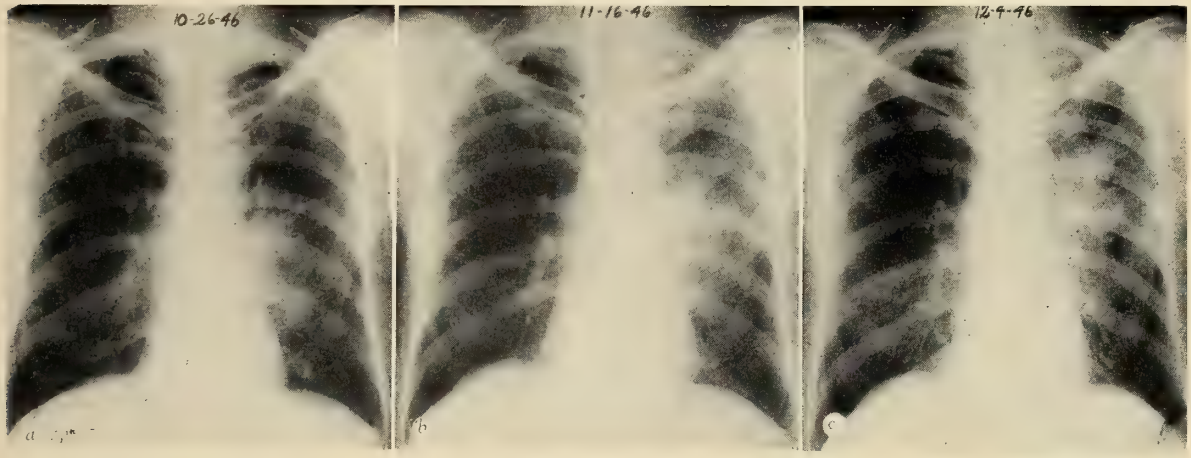


Fig. 6 (Case 6). *a*, Lesion in left lung which was thought to be pneumonia; *b*, same lesion three weeks later after patient had received penicillin. The lesion is not only still present but is more extensive; *c*, same lesion five and one half weeks after *a*. It proved to be a carcinoma of the bronchus to the left upper lobe.

pneumonia should be considered to be well until a follow-up roentgenogram of the chest shows complete disappearance of the lesion originally noted. As long as a shadow persists in the lung all of the usual methods of examination, such as study of the bronchial secretions, bronchoscopy, bronchography, and even exploratory thoracotomy should be employed to uncover the true nature of the disease.

Case 5.—A man, sixty-four years old, became acutely ill and experienced chills and high fever. He entered a hospital where a diagnosis of pneumonia was made after roentgenologic examination (Fig. 5 *a*). Treatment with penicillin, streptomycin and one of the sulfonamides was begun. He improved rapidly. Within a few days his temperature had returned to normal and another roentgenogram was made which showed a decrease in the involvement of the lungs (Fig. 5 *b*).

A week or so following his dismissal from the hospital fever recurred. A roentgenogram made about four weeks after his last examination showed that the lesion in the right lung had not disappeared (Fig. 5 *c*). For this reason a bronchoscopic examination was carried out. A carcinoma was found at the junction of the bronchi to the right middle and lower lobes.

Case 6.—A man, sixty-nine years old, was first examined in September, 1945. He was found to have benign hypertrophy of the prostate. A roentgenogram of the chest made at that time was considered to be normal. The patient returned in October, 1946, with symptoms referable to the urinary tract. He was found to have a temperature of 100.4° F. He said that he had caught cold three days before, had suffered from a chill and had begun to cough at that time. Roentgenologic examination revealed a lesion in the left lung which was thought to represent pneumonia (Fig. 6 *a*). The patient entered a hospital and was treated with penicillin for ten days. When at the end of this period

his fever did not subside and a roentgenogram showed the lesion in the left lung to persist, bronchoscopy was performed. No tumor was seen, nor did the bronchial secretions contain malignant cells.

The patient was kept under observation. Roentgenograms were made at intervals and these continued to show the lesion in the left lung (Fig. 6 *b* and *c*). Another bronchoscopic examination failed to find malignant cells or tissue. Finally, exploratory thoracotomy was advised. At operation a squamous cell epithelioma was found involving the bronchus to the left upper lobe. Pneumonectomy was carried out.

Cases 5 and 6 illustrate the type of carcinoma of the lung which imitates pneumonia from the clinical and roentgenologic points of view. Both patients were thought to have pneumonia and both were treated with antibacterial agents. In each case the true nature of the disease was discovered because subsequent roentgenograms failed to show complete disappearance of the lesion. Even when clinical signs and symptoms of pneumonia disappear, follow-up roentgenograms should be made to be sure that the disease is no longer present. A persistent shadow on the roentgenogram demands further investigation.

Summary and Conclusions

Three of the pitfalls which delay the early diagnosis of carcinoma of the lung result from the tendency for this malignant lesion to masquerade in benign costume. The pitfall of the benign tumor can be avoided by the early use of exploratory thoracotomy whenever a single circumscribed mass which eludes diagnosis by all other methods is present in the lung. The pitfall of the pulmonary abscess can be avoided by the analysis of sputum, bronchoscopy, and biopsy and even exploratory thoracotomy in all cases of chronic cavitating disease of the lung encountered in an adult patient for which some specific etiologic factor cannot be found. The pitfall of pneumonia can be avoided by the use of the follow-up roentgenogram, and by maintenance of a high degree of suspicion for any lesion which does not disappear roetgenologically in ten to fourteen days. A constant awareness of these problems by all physicians will make for earlier diagnosis of malignant disease of the lung. This in turn will improve the results of surgical procedures, the only satisfactory method of treatment for this disease known today.

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THE FORTIFICATION OF MILK WITH VITAMINS A AND D

For many years the Council on Foods and Nutrition has approved fortification of milk with vitamin D. The Council has stated the opinion that fortification of milk as a general purpose food with vitamin A is not in the interest of public health. However, no objection is taken to the concurrent presence of vitamin A when the preparation used for fortifying with vitamin D contains vitamin A in natural association.

The Food and Drug Administration, in defining a standard of identity for evaporated milk, took no exception to the concurrent presence of both vitamins A and D in fortifying agents when both vitamins are derived from natural sources.

Fish liver oil concentrates, sometimes used for fortifying milk with vitamin D, often contain relatively large amounts of vitamin A. Milk fortified with such concentrates has been accepted by the Council, and a statement of vitamin A content has been permitted on the label. However, claims concerning increased nutritive value because of the vitamin A content have not been permitted.

Before the Council can accept claims for milk fortified with vitamin A it seems desirable to have evidence that such fortification is in the interest of public health, even though the procedure is apparently harmless. Such evidence appears to be lacking. Diets that contain appropriate amounts of milk are likely to contain adequate vitamin A. The evidence now available does not warrant a change in the standing decisions of the Council on Foods and Nutrition concerning specific fortification of specific foods to include fortification of milk with vitamin A.

In its acceptance of milk fortified with preparations from natural sources that contain both vitamins A and D, the Council has assumed that the presence of vitamin A is incidental. In those instances in which the vitamin A component is adjusted to supply a specified amount, presumably the amount of vitamin A is not incidental and fortuitous. In any case, the addition of vitamin A does not constitute sufficient reason for acceptance of advertising that suggests special nutritional advantages. The addition of vitamin A to milk, already a good source of this nutrient, may add to the cost of the milk and is without apparent advantage to public health.—Council on Foods and Nutrition, J.A.M.A., 138:23, (Sept. 4) 1948.

The A. H. Sanford Lectureship

Introduction to Lectureship

KANO IKEDA, M.D.

Saint Paul, Minnesota

The members of the Minnesota Society of Clinical Pathologists are highly honored to have the privilege of sponsoring an annual Lectureship in Pathology and dedicating it to the Minnesota State Medical Association, in honor of one of its own members, Dr. Arthur H. Sanford, Rochester, Minnesota.

The objective of the lectureship is twofold: first, to honor one of its most distinguished members who stands among the few foremost clinical pathologists of the day, and who has contributed heavily towards the moulding of the present-day science of medical diagnosis through laboratory methods; and secondly, through its medium, to bring the clinical pathologist closer to everyday practice of medicine, whereby the place of clinical pathology and laboratory diagnosis may be made more fully appreciated by the general practitioner.

It is hoped by the members of the Minnesota Society of Clinical Pathologists that these lectures to be delivered at a general session of the Minnesota State Medical Association, annually, by an outstanding man in the specialty which they represent, may be the means of perpetuating these objectives.

Dr. Arthur H. Sanford, a native of the state of Iowa, received his Master's degree in physiology, followed by a degree of Doctor of Medicine, from Northwestern University in 1907. He served as professor of physiology at Marquette University until 1911, when he came to the Mayo Clinic as bacteriologist. He became director of clinical laboratories and head of the section of clinical pathology, and since April, 1946, has been senior consultant in the section of clinical pathology. He is professor of clinical pathology of the Mayo Foundation, and special consultant of the United States Public Health Service. He received a Northwestern University alumnus award in 1940. Dr. Sanford is a founding member and past president of the American Society of Clinical Pathologists and of the American Board of Pathology, and a member of numerous scientific organizations and honor societies. He is a co-inventor with Dr. Charles Sheard, of the Mayo Clinic, of one of the first electro-photometric instruments to be put into practical use in the clinical laboratory, and the originator of numerous useful laboratory procedures which are employed daily in diagnosis. He is the author of many scientific articles dealing with clinical pathology. Dr. Sanford is well known for his popular textbook, "Clinical Diagnosis by Laboratory Methods," which is universally recognized as one of the most authoritative books on clinical pathology and laboratory medicine.

The members of the Minnesota Society of Clinical Pathologists are fortunate indeed to have, as a fellow member, a man of Dr. Sanford's attainments, whose leadership in their specialty is recognized wherever scientific laboratory methods are employed in medical diagnosis. We honor ourselves by dedicating to you this annual lectureship to honor Dr. Sanford, a pioneer clinical pathologist, for his contributions to the practice of medicine, which may be a perpetual source of inspiration to the practicing physicians of Minnesota.

* * *

A brief remark by Dr. Sanford followed.

The first A. H. Sanford Lecture was delivered by Dr. Robert Hebbel for Dr. E. T. Bell, Professor of Pathology and Head of the Department, The University of Minnesota Medical School, on "Pathology of Diabetes." This lecture is being published elsewhere.

Introduction of the 1948 Speaker

A. S. BAGGENSTOSS, M.D.

President of the Minnesota Society of Clinical Pathologists

Members of the Minnesota State Medical Association and Guests: At the inauguration of the Arthur H. Sanford Lectureship last year, the distinguished secretary and former president of our Society, Dr. Kaño Ikeda, stated that the objective of this lectureship is twofold: first, to honor one of its most distinguished members, Dr. Sanford, who stands among the foremost clinical pathologists of the day; and, second, to bring the clinical pathologist closer to the everyday practice of medicine to the end that the place of clinical pathology and laboratory diagnosis may be more fully appreciated by the general practitioner.

In the furtherance of these objectives, we have been fortunate indeed in obtaining as our speaker for the occasion, Dr. Benjamin J. Clawson, Professor of Pathology at the University of Minnesota. Dr. Clawson received his Doctor of Medicine degree in 1917 and his Doctor of Philosophy degree in 1919 at the University of Chicago. The trite expression, "he needs no introduction" was never more apt, for he has been on the faculty of the University of Minnesota since 1921. For many of you, as for me, this occasion will awaken memories of a kindly, stimulating and forceful teacher. Those of you who have had the fortunate experience of being a student under him know whereof I speak. However, it is not only as a teacher but as an investigator that Dr. Clawson has left his mark. No one in the medical world of today can write or talk or even think of heart disease or rheumatic fever without mentioning his name. Of his many outstanding contributions, I shall take time to mention only a few: his studies on the etiology of rheumatic fever, the pathogenesis of calcareous aortic stenosis, the Aschoff body, the relationship of subacute bacterial endocarditis to rheumatic endocarditis, the experimental work on the use of B.C.G. as an immunizing agent and his classic chapter on diseases of the heart in Dr. Bell's textbook. As one might anticipate, this scientific productivity has received recognition by his election to numerous scientific and honorary societies and inclusion of his name in several compendiums of outstanding scientists: the American Association of Pathologists and Bacteriologists; the American Society of Bacteriologists; Sigma Xi; and American Men of Science—to mention but a few of them. It is with great pleasure that I present to you Dr. Benjamin J. Clawson, who will speak on Rheumatic and Bacterial Endocarditis.

Dedicatory address at the Minnesota State Medical Association, at Duluth, July 1, 1947.

RHEUMATIC AND BACTERIAL ENDOCARDITIS

1740 Cases

B. J. CLAWSON, M.D.
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THIS discussion is an analysis of the types of endocarditis from a group of 1,740 cases of rheumatic and bacterial endocarditis in 37,725 autopsies (4.6 per cent) and in a total of 6,283 cardiac deaths in the same series of autopsies (27.6 per cent) (Table I). Of the 1,740 cases of endocarditis, 1,104 (63.4 per cent) are rheumatic and 636 (36.6 per cent) are bacterial (Table II). When it is remembered that nearly 90 per cent of the cases of bacterial endocarditis have a background of rheumatic valvulitis, it becomes evident that the rheumatic cases greatly outnumber the bacterial.

TABLE I. INCIDENCE OF RHEUMATIC AND BACTERIAL ENDOCARDITIS
37,725 autopsies and 6,283 cardiac deaths

	Per cent Autopsies	Per cent Cardiac deaths
A. Rheumatic (1,104 cases)	2.9	17.6
B. Bacterial endocarditis (626 cases)	1.7	10.1
C. Total (1,740 cases)	4.6	27.7

Depending upon the stage of the disease at which death occurred, the rheumatic group is divided into acute rheumatic endocarditis, recurrent rheumatic endocarditis, valve deformities and adherent pericardium. The bacterial group is separated into primary and secondary acute bacterial endocarditis, in which the clinical course is not more than six weeks, and subacute bacterial endocarditis, which has a duration of more than six weeks. The incidence of each type is shown in Table II.

It is impossible to study one of the two types of endocarditis without considering the other. This is especially true of the bacterial type, since it so commonly has a background of rheumatic endocarditis, acute, recurrent, or valve deformities (healed or nearly healed). The relationships in many cases are similar, but dissimilar ones are encountered. An effort is made to evaluate the significance of these relationships. The chief relationships observed and analyzed may be grouped as clinical, bacteriological, immunological and anatomical.

TABLE II. INCIDENCE OF TYPES OF RHEUMATIC ENDOCARDITIS (2.9 PER CENT) AND BACTERIAL ENDOCARDITIS (1.7 PER CENT)
37,725 autopsies, a total of 1,740 cases (4.6 per cent)

	Percentage of groups	Percentage of total group
Rheumatic (1,104)	100.0	63.4
1. Acute rheumatic (116)	10.5	6.6
2. Recurrent rheumatic (101)	9.2	5.8
3. Valve deformities (850)	77.0	48.8
4. Adherent pericardium (37)	3.3	2.1
Bacterial (636)	100.0	36.6
1. Primary acute (55)	8.7	3.2
2. Secondary acute (135)	21.2	7.8
3. Subacute (446)	70.1	25.6

Clinical Relationships

Age.—Age is an outstanding clinical dissimilar relationship. Rheumatic endocarditis is the type found primarily in the pediatric wards, while on the other hand, the internist generally sees the subacute bacterial type. The separating line is close to the fifteenth year.

Cohn,[5] in his analysis of a large number of cases of rheumatic endocarditis, found that the first manifestations of acute rheumatic endocarditis occurred under thirteen years of age in 86 per cent of his cases. Gelfman,[7] in an analysis of 578 cases of rheumatic heart disease, found subacute bacterial endocarditis as a cause of death to be particularly low under the age of ten. In an analysis of the ages in which death occurred in ninety-eight cases of acute rheumatic endocarditis and 417 cases of subacute bacterial endocarditis, I found that 83.3 per cent of the individuals with acute rheumatic endocarditis who died in the first attack were under twenty years of age. Only 11 per cent of the 417 cases of subacute bacterial endocarditis were under twenty years of age at

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TABLE III. AGES AT WHICH DEATH OCCURRED

Acute rheumatic endocarditis (96 cases); subacute bacterial endocarditis (417 cases)

Decades	Acute rheumatic		Subacute bacterial	
	No.	Per cent	No.	Per cent
1	40	41.6	8	1.9
2	40	41.6	38	9.1
3	9	9.3	91	21.8
4	5	5.2	98	23.5
5	1	1.0	79	18.9
6	0	0.0	56	13.4
7	0	0.0	36	8.6
8	1	1.0	8	1.9
9	0	0.0	3	0.7
10	0	0.0	0	0.0
Below 20	80	83.3	46	11.0
Above 20	16	16.6	371	88.9

TABLE IV. INTERVAL BETWEEN ACUTE RHEUMATIC ENDOCARDITIS AND THE BEGINNING OF SUBACUTE BACTERIAL ENDOCARDITIS

In patients 20 years old or younger (25 cases)

Interval	No.	Per Cent
1. Continuous	17	68.0
2. Two months to one year	3	12.0
3. Three years	2	8.0
4. Eight years	1	4.0
5. Nine years	1	4.0
6. Twelve years	1	4.0

the time of death (Table III). The reason for this age difference in the two types of endocarditis has not been determined.

Transition of Acute Rheumatic into the Subacute Bacterial.—A gradual passing of acute rheumatic endocarditis into the bacterial type is commonly observed by the clinicians and the pathologists. The bacterial type is more severe clinically and before the use of penicillin nearly always ended fatally. An original diagnosis of acute rheumatic endocarditis is often changed to subacute bacterial endocarditis, if the case progresses toward a fatal termination. In a group of twenty-five cases of established subacute bacterial endocarditis in patients not more than twenty years old, seventeen (68 per cent) had a continuous course from acute rheumatic endocarditis into the typical subacute bacterial type. In three, the periods between the manifestations of the two diseases were two months to one year (Table IV). The transition from the acute rheumatic to the subacute bacterial type may be so gradual that it is impossible to say where the one ends and the other begins.

Background of the Subacute Bacterial Type.—A third clinically observed relationship is that in

TABLE V. EVIDENCES OF A RHEUMATIC BACKGROUND IN SUBACUTE BACTERIAL ENDOCARDITIS

219 cases

Evidence	Number Examined	Number Positive	Per Cent Positive
1. History of rheumatism	101	82	81.2
2. Thickened involved valve	219	151	68.9
3. Thickened noninvolved valve	219	22	10.0
4. One or more	219	178	81.3

TABLE VI. HOW DEATH OCCURS WITH RHEUMATIC HEART DISEASE

1407 cases

Kinds	No.	Per cent
Acute rheumatic	114	8.1
Recurrent rheumatic	97	6.8
Valve deformities	784	55.7
Adherent pericardium	37	2.6
Subacute bacterial endocarditis	375*	26.7
Total	1407	99.9

*90 per cent of subacute bacterial endocarditis.

nearly 90 per cent of the cases of subacute bacterial endocarditis there is a background of a rheumatic valvular lesion, acute, partially healed or completely healed (Christian[2]). Christian observed that the determinative background of subacute bacterial endocarditis was rheumatic heart disease in 89.33 per cent of 150 consecutive adult cases of subacute bacterial endocarditis caused by *streptococcus viridans* and in 90.24 per cent of 174 consecutive adult cases of subacute bacterial endocarditis of all causes studied at the Peter Bent Brigham Hospital. In a series of 219 of our cases of subacute bacterial endocarditis, in which descriptions were sufficient to permit a fairly accurate evaluation of the degree of valvular deformity and in which a history of rheumatism was given, it was apparent that a background of rheumatic fever was present in at least 178 of the 219 cases (81.3 per cent) (Table V).

Subacute Bacterial Endocarditis a Cause of Death in Rheumatic Heart Disease.—A fourth clinical relationship is that subacute bacterial endocarditis is the primary cause of death in from 25 to 30 per cent of all cases of rheumatic valve deformities. Table VI shows how death occurred in 1,407 cases of rheumatic heart disease. On the basis of there being a rheumatic background in 90 per cent of the cases of subacute bacterial endocarditis, it is noted that 26.7 per cent of all patients with rheumatic heart diseases died from subacute bacterial endocarditis. When the acute

and recurrent rheumatic cases are omitted, the percentage is increased to about 30.

TABLE VIII. MAXIMUM STREPTOCOCCIC AGGLUTINATION TITERS IN NORMAL PEOPLE, ACUTE RHEUMATIC ENDOCARDITIS AND SUBACUTE BACTERIAL ENDOCARDITIS

Dilution	Below 50	50	100	200	400	800	1600	3200	6400	12800	Above 400
Normal (81)	2%	5%	2%	18.5%	44.7%	26%	2%	0%	0%	0%	28%
Acute rheumatic (81)	0%	1%	0%	1%	9.%	15%	10%	26%	28%	10%	92%
Subacute bacterial (13)	0%	0%	0%	0%	7.6%	7.6%	7.6%	0%	46.2%	30.8%	89%

Bacterial Relationships

The organisms found in the blood stream in both types are usually *Streptococcus viridans,* a few per cubic centimeter of blood in the acute rheumatic when present and many in the bacterial. While the general belief is that acute rheumatic fever is in some way closely related to hemolytic streptococcic sore throat, yet, as stated by Jones[4] and according to the observations of others, the organisms found in the blood stream are generally *Streptococcus viridans.* There are different opinions concerning the significance of these organisms in the blood. Streptococci have been cultured in from 50 to 60 per cent of patients with acute rheumatic fever. In a series of 252 of our cases of subacute bacterial endocarditis, there were positive bacterial findings reported in 207 (82.1 per cent). Of these, *Streptococcus viridans* was the organism cultured from the blood in 170 (67.5 per cent) (Table VII).

TABLE VII. BACTERIAL FINDINGS IN SUBACUTE BACTERIAL ENDOCARDITIS

252 cases

Organisms	Number	Per Cent
1. Str. viridans	170	67.5
2. Str. hemolyticus	16	6.3
3. Staphylococcus	14	5.5
4. Brucella	4	1.6
5. H. influenzae	1	0.4
6. Gonococcus	2	0.8
Total	207	82.1

Immunological Relationships

Humoral Antibodies.—Both types of endocarditis have high titers of streptococcic humoral antibodies, as agglutinins, precipitins, complement-fixing antibodies and, generally in the acute rheumatic type, antistreptolysins. These antistreptolysins tend to disappear, since they are present in only about 30 per cent of individuals with healed valve deformities in whom obviously previous attacks of acute rheumatic endocarditis have occurred (Wimblad[12]). The maximum streptococcic agglutination titers in normal individuals and in those with acute rheumatic endocarditis and subacute bacterial endocarditis are recorded in Table VIII. The percentage of positive findings in dilutions above 1-400 is approximately the same in the two types of endocarditis and definitely higher than in the normal cases.

Hypersensitiveness.—Skin tests to streptococci or streptococcic products are positive in 75 to 85 per cent of patients with acute rheumatic endocarditis, 50 per cent in those with healed valve deformities, and are generally negative in those with subacute bacterial endocarditis (Birkhaug,[1] Gibson, Thomson and Stewart,[8] and Favour, Janeway and Gibson and Levine[6]).

The bacterial type of allergy in rheumatic fever has been studied by Swift,[10] Birkhaug,[1] Thomson, Gibson and Stewart,[8] and others. It has been shown by intradermal skin tests that a high percentage of patients with acute rheumatic fever are allergic to streptococci and that patients with bacterial endocarditis who have been clinically cured by penicillin therapy again become hypersensitive.[6] This suggests that patients having bacterial endocarditis had previously been allergic but had been desensitized by heavy blood stream infection.

A point to be considered in thinking of the role of delayed hypersensitiveness in rheumatic endocarditis is whether the rheumatic child was allergic before contracting rheumatic fever or whether

allergy exists as a result of rheumatic infection or of intercurrent infections with increasing age. Birkhaug's[1] observations showed that 20 per cent of normal children and 85 per cent of rheumatic children were allergic to streptococci. Gibson, Thomson and Stewart,[8] by skin tests with extracts of hemolytic streptococci, found that the percentage of allergy rose from the age of five years to that of fifteen years, when it ceased to increase in both rheumatic and control children. At fifteen years of age, there was practically no difference in the frequency and the degree of allergy to *Streptococcus hemolyticus* extracts (68 per cent in rheumatic, 66 per cent in controls). They concluded that their word did not add much to support the allergy theory in the pathogenesis of acute rheumatic fever. The same conclusion was reached by Jones.[9] Clawson and Wetherby[3] found that 50 per cent of apparently normal people gave a positive intracutaneous reaction to *Streptococcus viridans*. Hypersensitiveness to streptococcic products is rare in young children when acute rheumatic fever begins, but is common in adults. It is especially high in both children and adults who have or have recently had rheumatic fever. Rheumatic fever seldom occurs for the first time in adults, and bacterial endocarditis is rare in adults except in people who have previously had rheumatic endocarditis. It may be suspected that allergy may be a factor in the beginning of bacterial endocarditis, rather than in the rheumatic type.

Anatomical Relationships

Gross Vegetations.—In the endocarditis immediately associated with acute rheumatic fever (rheumatic endocarditis, simple verrucous endocarditis), the heart valves on gross examination show small, rather smooth, globular nodules at points of contact of the leaflets a short distance back from the free margin on the atrial surfaces of the mitral and tricuspid and on the ventricular surfaces of the aortic and pulmonary valves. Usually these vegetations are not extensive enough to interfere seriously with the function of the valves.

In subacute bacterial endocarditis, the vegetations are, in the main, large, soft and villous. The consistency and size of the subacute bacterial vegetations make it easily possible for particles to break loose into the blood stream and produce the embolic processes so commonly found in subacute bacterial endocarditis.

Microscopic Vegetations.—Microscopically, the acute rheumatic lesions show the inflammation within and throughout the substance of the leaflet. The elevated nodules form only at the line of contact of the leaflets. An important histological feature is the presence of hyaline fibrinoid material within the valves. A small platelet thrombus is present in which bacteria are not found. A cellular inflammatory reaction occurs with the fibrinoid changes and is chiefly a proliferative inflammation. The cells are spindle-shaped and rounded, generally with an abundant cytoplasm. They are usually mononuclear, but multinucleated forms are common. They are derived from fibrocytes, histiocytes, blood lymphocytes and from a special histiocyte, the Anitschkow cell. This cell is peculiar in being found only in the heart. Definite Aschoff nodules are frequently seen in the acutely inflamed valve.

In subacute bacterial endocarditis all the structures of the acute rheumatic valve are present, and in addition there is large platelet thrombus in which many bacteria, generally in colonies, are usually found. The infected thrombus is the distinguishing characteristic lesion of bacterial endocarditis.

Vegetations characteristic of the rheumatic type may generally be found on the same cusps with the vegetations of the subacute bacterial type (80 per cent Clawson,[4] 100 per cent Von Glahn and Pappenheimer[11]). Acute rheumatic vegetations may be present on the cusp of one valve, while on another there may be subacute bacterial lesions. Recent observations have illustrated how the presence of the two types of lesions can be demonstrated on the same valve. Typical cases of subacute bacterial endocarditis cured by penicillin therapy have come to autopsy with death from other causes. The large villous vegetations were absent, and organisms could not be cultured from the blood or found in the valve by the Gram-Weigert stain. Within the valve, the inflammatory reaction was typically that of acute or recurrent rheumatic endocarditis.

Valves Involved.—The valvular involvement in acute rheumatic endocarditis and bacterial endocarditis is noted in Table IX. In either group,

the aortic and mitral are the only valves involved to any extent. The tricuspid alone and the pulmonary alone are seldom involved in the acute rheumatic type but are more frequently affected in the subacute bacterial.

brain 42 (11.5 per cent), kidneys and brain 7 (1.9 per cent) or a total of 256 (70.3 per cent). Embolic phenomena are not present with acute rheumatic endocarditis. Evidence of embolic processes is a dissimilar relationship.

TABLE IX. VALVE INVOLVEMENT IN ACUTE RHEUMATIC AND SUBACUTE BACTERIAL ENDOCARDITIS

	Valves														
Kinds	A	M	T	P	AM	AT	AP	AMT	AMP	AMTP	MT	MP	MTP	TP	Total
Acute Rheumatic	2	43	0	1	24	0	0	10	0	9	9	0	0	0	98
Subacute Bacterial	65	137	7	7	132	4	1	6	1	0	3	0	0	0	363
Total	67	180	7	8	156	4	1	16	1	9	12	0	0	0	461

TABLE X. COMBINATIONS OF VALVULAR INVOLVEMENT

Aortic alone, mitral alone, and aortic and mitral combined, per thousand autopsies in rheumatic heart disease and bacterial endocarditis

	Males					Females				
	No.	A	M	AM	Total	No.	A	M	AM	Total
Rheumatic	478	8.1	8.1	9.9	26.2	300	2.2	18.7	9.8	30.8
Subacute bacterial	217	3.0	3.8	5.0	11.9	111	1.4	6.0	3.9	11.4

TABLE XI. MYOCARDITIS IN ACUTE RHEUMATIC AND SUBACUTE BACTERIAL ENDOCARDITIS

	Aschoff nodules		Diffuse inflammation		Abscesses		Peri-arterial scars		One or more	
	No.	%	No.	%	No.	%	No.	%	No.	%
Acute rheumatic (295)	47	67.2	12	17.9	2	2.9	21	31.3	53	79.1
Subacute bacterial (60)	27	45.0	36	60.0	13	21.5	38	63.5	53	88.5

The relation of sex to the three kinds of valvular involvement (aortic alone, mitral alone and mitral and aortic combined) is of interest in showing a low aortic involvement and a high mitral involvement in the females (Table X). This is most pronounced in the rheumatic group, but it is definitely significant also in the subacute bacterial group. This anatomical relationship shows a marked similarity in the two groups.

Embolic Phenomena.—Evidences of embolic phenomena are common with subacute bacterial endocarditis. In 364 cases embolic phenomena were present as follows: spleen 72 (19.7 per cent), kidneys 22 (6 per cent), brain 14 (3.8 per cent), spleen and kidneys 88 (24.1 per cent), spleen and brain 11 (3.0 per cent), spleen, kidneys and

The Myocardium.—The various types of inflammation are seen in Table XI. The Aschoff nodule is less frequent in subacute bacterial endocarditis, 45 per cent, while in the acute rheumatic endocarditis it was present in 67.2 per cent of the cases. Von Glahn and Pappenheimer found the Aschoff nodule to be present in 46 per cent of the cases of subacute bacterial endocarditis which they studied. Abscesses are more common in the subacute bacterial type. Evidences of inflammation, acute or healed, occurred in 79.1 per cent of the acute rheumatic cases and in 88.5 per cent of the subacute bacterial cases.

Pericarditis.—The presence or absence of pericarditis has at times been used to differentiate acute rheumatic endocarditis from subacute bac-

terial endocarditis. Table XII shows the frequency of pericarditis in our cases of acute and recurrent rheumatic endocarditis, in healed rheumatic valvular deformities and in subacute bacterial endocarditis. Pericarditis is more frequent in the acute type of rheumatic endocarditis (41.5 per cent). This incidence does not represent the clinical incidence for the acute pericarditis evidently contributes largely as cause of death.

TABLE XII. FREQUENCY OF PERICARDITIS IN RHEUMATIC ENDOCARDITIS AND SUBACUTE BACTERIAL ENDOCARDITIS

	Number with pericarditis	Per cent
Acute and recurrent rheumatic endocarditis (183)	86	41.5
Healed valve deformities (671)	125	18.5
Total rheumatic (854)	211	24.7
Subacute bacterial endocarditis (364)	78	21.4

The frequency of pericarditis with the entire group of rheumatic hearts closely represents the clinical incidence of pericarditis with acute rheumatic endocarditis. It is obvious that in the cases of rheumatic valvular deformities there has been an acute rheumatic endocarditis. Evidently, in the cases of healed valve deformity in which there is no acute pericarditis or adherent pericardium, there never has been an acute pericarditis; for the type of pericarditis (fibrinous) which is associated with acute rheumatic fever undergoes organization early in its course, and permanent fibrous adhesions result. The incidence of pericarditis with the group of rheumatic hearts is 24.7 per cent, only slightly higher than the incidence with subacute bacterial endocarditis (21.4 per cent). Since the incidence of pericardial involvement in the total number of rheumatic heart disease cases represents closely the actual clinical incidence of pericarditis with acute rheumatic endocarditis, and since this incidence is nearly the same as the incidence of pericarditis in cases of subacute bacterial endocarditis, it appears obvious that the presence or absence of pericarditis cannot be used clinically to differentiate the two types.

Interpretations of the Relationships of Acute Rheumatic and Subacute Bacterial Endocarditis

The relationships are mostly similar with the following exceptions in the subacute bacterial type: the older age at which the endocarditis appears, the more severe clinical course, the greater ease with which organisms are recovered from the blood stream, the general absence of streptococcic allergy, the larger and infected thrombus on the valve and the embolic phenomena.

The first of these dissimilar relationships may possibly be explained by a difference of streptococcic hypersensitiveness in the two age groups. The remaining four differences may be accounted for by the effect of the large infected thrombus, the characteristic valvular lesion in subacute bacterial endocarditis.

From a study of the various relationships of the two types of endocarditis, two different theories have evolved:

1. The two types of endocarditis are different diseases.
   (a) A healed rheumatic valve becomes infected.
   (b) An acute rheumatic vegetation becomes infected with another infective agent.
2. They are the same disease etiologically, with different clinical and pathological manifestations.

Which or whether either of these two theories is correct has not yet been answered.

Summary

1. Rheumatic heart disease causes about 3 per cent of all deaths and 17.5 per cent of the cardiac deaths. Bacterial endocarditis causes about 1.5 per cent of all deaths and 10 per cent of cardiac deaths.

2. Approximately 90 per cent of the cases of subacute bacterial endocarditis have a rheumatic background.

3. From 25 to 30 per cent of patients with rheumatic heart disease finally die with subacute bacterial endocarditis.

4. Close clinical, bacteriological, immunological and anatomical relationships exist between rheumatic endocarditis and bacterial endocarditis.

5. The significance of these relationships has not been definitely determined in all cases.

6. It cannot be conclusively determined from human cases of endocarditis whether acute rheumatic endocarditis and subacute bacterial endo-

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VAGOTOMY FOR PEPTIC ULCER: A FOLLOW-UP STUDY OF TWENTY CASES

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THE object of the present paper is not to attempt to settle the current controversial and often inconsistent points of view on vagotomy for the treatment of peptic ulcer, but rather to present some data based on the study of the first twenty patients thus treated at the Asbury Hospital during the past two years. Because of the small number of cases and the short lapse of time, the data, as well as the few conclusions derived from them, are by no means decisive and final, and can only serve to provoke further argument on the efficacy of vagotomy for the treatment of peptic ulcer, an argument which, in all likelihood, will continue for many years to come. It has been said that discoveries in medicine are perennially made, discarded, forgotten, and then rediscovered, and their significance and values are finally established. This might very well be the case with vagotomy.

TABLE I. DISTRIBUTION OF AGE AT ONSET AND ON ADMISSION IN TWENTY PATIENTS

Decade	Onset	Admission
	No. of Patients	No. of Patients
1	1	
2	1	
3	7	
4	7	4
5	3	9
6	1	5
7		1
8		1
Average	31.2 yrs.	48.9 yrs.

The present series comprises twenty cases of vagotomy performed at the Asbury Hospital between February, 1946, and November, 1947. In this series there are seventeen males and three females, a ratio of about six to one. The distribution of age at onset of symptoms and on admission, and the duration of the peptic ulcer and of medical treatment are respectively illustrated in Tables I and II.

Nine of the twenty patients had a history of bleeding, and three of them of perforation, of whom two had a surgical closure. Of the series of twenty, seventeen had duodenal ulcer, one had gastric ulcer, and two had both. The operations

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TABLE II. DURATION OF DISEASE AND OF MEDICAL TREATMENT IN TWENTY PATIENTS

Years	Since Appearance of Symptoms	Since Disease Diagnosed	Duration of Medical Treatment
1—5	2	7	10
6—10	4	6	7
11—15	5	4	3
16—20	3	1	
21—25	1	1	
26—30	2	1	
31—35	2		
36—40	1		
Average	16.7 yrs.	9.0 yrs.	5.6 yrs.

TABLE III. OPERATIONS FOR PEPTIC ULCERS

Surgeon	No. of Patients	Lesion	Operation
A	12	DU	TV
	1	DU	AV
B	1	DU	TV
C	1	DU	TV
	1	DU	AV GE
D	1	GU–DU	TV GR
E	1	GU–DU	AV GE
	1	GU	AV GE
F	1	DU	TV

DU—Duodenal Ulcer
GU—Gastric Ulcer
TV—Transthoracic Vagotomy
AV—Abdominal Vagotomy
GE—Gastroenterostomy
GR—Gastric Resection

were performed by six different surgeons designated as A, B, C, D, E and F, and lesions and operations are shown in Table III. Fifteen patients with duodenal ulcer including one having had a gastroenterostomy twenty-eight years previously and a revision of the gastroenterostomy twelve years ago, were treated by transthoracic vagotomy. One patient with duodenal ulcer was treated by abdominal vagotomy and another by abdominal vagotomy with gastroenterostomy. One patient with both duodenal and gastric ulcer was treated by abdominal vagotomy and gastroenterostomy, and another patient with both duodenal and gastric ulcer was treated by transthoracic vagotomy with a subsequent gastric resection and gastroenterostomy.

In the follow-up study, the patients were interviewed, x-rayed and asked to answer a question-

naire, four to twenty-five months postoperatively. They were also asked to give their own opinions on the results of vagotomy for the treatment of their peptic ulcers. On the basis of the x-ray appearance of the stomach and duodenum preoperatively and postoperatively, the relief of symptoms, the presence of complications and the general well-being of the patient as a whole, the result in each case was then evaluated as will be illustrated later on.

X-Ray Studies

X-ray studies were made of the entire group of patients, ranging from two to twenty-four months subsequent to operation. Evidence of active duodenal ulcer, which was found on x-ray in seventeen patients before operation, was absent in all seventeen after vagotomy. The result from the x-ray viewpoint is therefore 100 per cent satisfactory. Deformity of the duodenal cap was as constant a feature after as before the operation, whereas irritability and spasm of the cap was present in five patients before but in none after vagotomy.

In the stomach, hypertrophic gastritis, which was encountered in eight patients preoperatively, disappeared after operation. A lesion at the pylorus, in the form of spasm, irregularity, deformity, adhesion or obstruction, was present in the three patients with gastric ulcer, and disappeared with the gastric ulcer after vagotomy and gastroenterostomy in two patients, but persisted with the gastric ulcer after simple vagotomy in the third. Another patient with a partially obstructed pylorus without ulcer showed deformity after simple vagotomy.

In the group with simple vagotomy, there is a tendency towards initial retention of secretion and food, delayed emptying, decreased tone, dilatation and reduced peristalsis postoperatively as compared with the gastric motility preoperatively. A decrease in gastric motility was apparent in five patients before, and was evident in thirteen patients after, simple vagotomy. In the group with vagotomy and gastroenterostomy, no such appreciable change was noted.

In five patients where more than one x-ray was made following simple vagotomy, there was a gradual improvement or return of the gastric motility, and in one patient the gastric motility which had been decreased before the operation resumed normally postoperatively.

TABLE IV. COMPARISON OF 12-HOUR GASTRIC NIGHT SECRETION

A.O.: 16 cases			P.O.: 6 cases			Follow-up: 3 cases		
Amount	Free Hcl	Total Hcl	Amount	Free Hcl	Total Hcl	Amount	Free Hcl	Total Hcl
670 c.c.	71	104	487 c.c.	12	39	497 c.c.	36	93

Figures represent average values in each group.

Gastric Acidity

The twelve-hour night secretion test for gastric acidity was not routinely carried out in all patients, and the technique of the test was not uniform. It was made in sixteen patients preoperatively and repeated in six patients immediately after simple vagotomy. A follow-up study was carried out in three patients from three to ten months postoperatively. The average figures of total secretion, free HCl and total HCl are indicated in Table IV. It is noted that hyperacidity which is present preoperatively tends to diminish postoperatively. This may be more than coincidental with the x-ray findings in which the gastric motility was decreased in those cases where a decreased acidity was present postoperatively.

The insulin test for gastric acidity, believed to be invaluable in ascertaining the completeness of the section of the vagus nerve, was done in only one patient in this series and is not included in the study. The results from the twelve-hour night secretion test performed in patients of the present series are a relative measure of acidity and are to be interpreted as such accordingly.

Relief of Symptoms

Although incomplete relief of symptoms in some patients and persistence of symptoms in a few were encountered, the relief of symptoms was, in general, definite. Seven patients had complete relief of their preoperative symptoms, whereas thirteen had incomplete relief or persistence of one or more of their original complaints. However, if the intensity, the frequency and the duration of these symptoms are considered, a marked improvement following operation was noted. The pain now is not as constant a feature as it used to be, and it does not affect the patients' daily activities nor interrupt their sleep. Gas, when present, can be easily eructed. In fact, except in two patients who are psychoneurotic, all these symptoms of pain, gas and belching, nausea

and vomiting, fullness and distress, when still present after vagotomy, are well under control so long as the patients do not indulge in dietary indiscretion.

Body Weight

The body weight of the twenty patients is compared before and after survey. The body weight at the time of follow-up, ranging from four to twenty-five months postoperatively, when compared with the minimal weight previous to surgery indicates that three show no change and seventeen show a gain of from 5 to 70 pounds. The average gain thus compared is 17.4 pounds. When compared with the usual weight previous to operation, four show no change, six show a loss of from 5 to 25 pounds, and ten show a gain of from 5 to 20 pounds. The average gain thus compared is 2.8 pounds. It is noted that patients who were overweight from the effects of the ulcer diets were able to reduce to normal weight and that underweight patients were able to eat normally and gain weight after vagotomy.

Diet

According to the tolerance of various foods, the patients are divided into four groups. Those who could tolerate only a strict diet before the operation but can enjoy a liberal diet after operation belong to Group I. There are five patients in this group. Those who could tolerate a limited diet before, but can enjoy a liberal diet after surgery are classified as Group II. There are three patients in this group. In Group III are four patients who could only tolerate a strict diet before but can enjoy a moderate diet after surgery. In Group IV are seven patients who could tolerate a limited diet before but can tolerate a moderate diet after operation. In one patient no change is observed after operation.

Tobacco could not be tolerated before, but is tolerated well or in moderation after operation in four patients. The same is observed in the case of alcohol. Two patients show no improvement in the tolerance of tobacco and alcohol postoperatively.

Activities

In seventeen of the twenty patients the daily activities were interrupted with a variable amount of work loss attributed to the ulcer before operation. Postoperatively, fourteen have been able to resume their normal activities without any loss of work, and three were still doing light work at the time of the follow-up. Of the remaining three patients, one was feeling weak and tired and thought that age was against him. One was as anemic and listless as before, and was later found to have a cancer of the uterus. One who never let his ulcer interfere with his work, but had to spend from $600 ao $1,200 a year for medical care for five years previous to operation, has been working in a fuller capacity since the operation.

Psychic Factor

Fourteen of the patients indicate that they are nervous and high-strung individuals with excessive stress and strain and undue worries and excitements. Their own expressions are "discontented childhood," "dissatisfied home life," "things made me sick," "disappointed in love," et cetera. Seven patients of this group showed improvement after operation, and described their improvement as "full of pep," "with ambition never had before," "feel like a new person," "life's worth living," "never worry about things that can't be helped." Two psychoneurotic patients, both with an intestinal disorder, were skeptical about the results of vagotomy. One of them is now much improved after some psychotherapy, but the other, who has been informed of the inadvisability of vagotomy by one doctor and advised to have a gastroenterostomy by another, still has a number of indefinite complaints. One patient who does not belong to this group stated that while on a strict milk diet during a bad attack of ulcer, the news of his father's death brought about a severe attack of pain and bleeding so that he was confined to bed for two weeks. Another patient who also does not belong to this group recalled that the onset of his illness was preceded by a fight with a business associate. The incident occurred at a time after his wife had just had an operation. One patient belonging to the group of fourteen found no relief of his nervous condition after twelve months and doubted whether vagotomy is beneficial in nervous conditions.

Surgical Morbidity and Complications

There is no mortality in this series, and the results in general are satisfactory. Regardless of the type of operation performed, the postoperative stay in the hospital was about ten days on the

TABLE V. GASTRO-VISCERAL AND OTHER COMPLICATIONS IN TWENTY PATIENTS

Patient's Symptoms	T.V./A.V.	A.V.–G.E.
Diarrhea	7	0
Belching	3	1
Incisional Pains	3	0
Abdominal Pains	3	0
Numbness	3	0
Fullness	1	1
Distress	1	0

TV—Transthoracic Vagotomy
AV—Abdominal Vagotomy
GE—Gastroenterostomy

average. The patients were usually allowed up on the third day and were allowed a diet on the fourth postoperative day.

Pulmonary complications, in the form of pleurisy, pneumothorax, emphysema, atelectasis and pleural thickening, only occurred following simple vagotomy and were present clinically in ten patients. In the x-ray follow-up of the series, pleural thickening was found in fourteen patients. By comparing the results observed clinically and those from x-ray follow-up, it is noted that some of these complications were detected clinically only, some in the x-ray only, and some both clinically and in the x-ray, totally in sixteen patients.

In Table V the gastrovisceral and other complications are listed. Diarrhea, which probably develops from an imbalance between the sympathetic and parasympathetic nervous systems, appeared in seven patients, and was relieved in five after a period of two to three months postoperatively, but had persisted off and on in two patients up to eleven months and fourteen months, respectively, when last interviewed. One of the latter two patients is a psychoneurotic previously mentioned. Abdominal pain developed in three patients, two of whom are the psychoneurotics. Incisional pain was encountered in three patients, the severest up to three months postoperatively. Belching was found in four patients, but was considered by all except one as a relief of the gas which they used to have. There were, in addition, three cases of numbness, two cases of fullness and one case of distress. The gastrovisceral and other complications, in one or more forms, therefore developed in fourteen (70 per cent) of the patients, including the two with psychoneurosis. It is noted, however, that all these complications are generally not severe enough to cause much discomfort. They are transitory and have a tendency to disappear in the course of time.

Résumé of Illustrative Cases

Case 1.—DW 48F. Gas pain, vomiting, fullness for forty years. Duodenal ulcer diagnosed for twenty-two years. Medical treatment for two years. X-ray: Active duodenal ulcer, cap deformity. Transthoracic vagotomy on 2-23-46. X-ray, one month: Stomach with moderate retention. Cap deformity without active duodenal ulcer. Twenty-three months: Stomach with minimal retention, 40 per cent emptying at four hours, moderate dilatation, shallow peristalsis. Cap deformity without active duodenal ulcer. Pleural thickening. Follow-up, twenty-five months: Some gas, fullness occasionally. Incisional pain one to two months. Feeling well in general.

Case 2.—IB 43M. Gas pain, constipation for seven years. Duodenal ulcer diagnosed for two years. Medical treatment for two years. History of bleeding. Psychoneurosis. Irritable colon. Prejudiced against medical treatment. X-ray: Active duodenal ulcer, cap deformity. Hypertrophic gastritis, eccentrically placed pylorus. Transthoracic vagotomy on 5-18-46. X-ray, twenty-two months: Stomach with retention, 100 per cent emptying at four hours, slight dilatation. Cap deformity without active duodenal ulcer. Pleural thickening. Follow-up, twenty-two months: Some gas pain, belching, pain in right lower quadrant, persistent constipation. Feeling better after psychotherapy.

Case 3.—AB 61M. Gas pain, distress for thirty-two years. Duodenal ulcer diagnosed for twenty-eight years. Medical treatment for ten years. Gastroenterostomy twenty-eight years ago. Revision of gastroenterostomy twelve years ago. Bleeding in 1935. X-ray: Active duodenal ulcer, cap deformity, irritability, spasm. Nonfunctioning gastroenterostomy. Transthoracic vagotomy on 6-21-47. X-ray, four months: Stomach with 70 per cent emptying at four hours. Cap deformity without active duodenal ulcer: Nine months: Stomach with slight retention; 85 per cent emptying at four hours; tone good. Cap deformity without active duodenal ulcer. Follow-up, nine months: Some gas pain, distress, belching, diarrhea occasionally. Constipation.

Case 4.—RL 42M. Gas pains for eleven years. Duodenal ulcer diagnosed for two years. Medical treatment for one year. History of bleeding. X-ray: Active duodenal ulcer. Hypertrophic gastritis. Abdominal vagotomy on 11-7-47. X-ray, two months: Stomach with retention, 10 per cent emptying at four hours, atonic, slightly dilated, peristalsis weak. Cap deformity without active duodenal ulcer. Pleural thickening. Follow-up, four months: Some gas pain, belching, diarrhea. Feeling well in general.

Case 5.—BT 51M. Pain for thirty years. Duodenal ulcer diagnosed for one year. Medical treatment for one year. X-ray: Active duodenal ulcer, cap deformity.

TABLE VI. SUMMARY OF RESULTS

	Patient	Sex	Age at Onset	Age on Admission	Duration of Symptoms (Yrs.)	Duration Since Diagnosis (Yrs.)	Duration of Medical Treatment (Yrs.)	Bleeding	Perforation	Lesion	Previous Operation	Type of Vagotomy	Duration of Vagotomy (Mo.)	Subsequent Operation	Result According to Patient	Result According to Evaluation
1.	DW	F	8	48	40	22	2	—	—	DU		TV	25		Excellent	Good
2.	AH	M	31	49	18	12	12	—	—	DU		TV	24		Good	Good
3.	IB	M	36	43	7	2	2	+	—	DU		TV	22		Fair	Good
4.	OP	M	21	47	26	14	14	+	+	DU	SC	TV	22		Excellent	Good
5.	KP	M	26	33	6	6	6	—	—	DU		TV	20		Good	Excellent
6.	AP	M	25	37	12	12	12	—	—	DU		TV	19		Excellent	Excellent
7.	JR	M	25	56	31	7	7	—	+	DU		TV	18		Excellent	Excellent
8.	GB	M	43	53	10	10	6	—	—	DU		TV	14		Fair	Fair
9.	AJ	F	31	34	3	2	2	—	—	DU		TV	13		Good	Excellent
10.	HM	M	41	41	(I)	(1)	(1)	+	—	DU		TV	12		Good	Good
11.	HMc	M	29	44	15	15	10	—	—	DU		TV	12		Fair	Good
12.	AB	M	29	61	32	28	10	+	—	DU	GE	TV	9		Good	Good
13.	RL	M	31	42	11	2	1	+	—	DU		AV	4		Excellent	Good
14.	CM	M	23	40	17	17	10	+	—	DU		TV	22		Good	Excellent
15.	OS	M	32	57	25	1	1	+	—	DU		TV	15		Excellent	Excellent
16.	BT	M	20	51	30	1	1	—	—	DU		AV GE	10		Good	Good
17.	JK	M	40	54	14	4	2	—	—	DU GU		TV	13	GR GE	Excellent	Poor
18.	AS	M	52	71	19	8	1	—	+	GU	SC	AV GE	12		Excellent	Excellent
19.	WG	F	38	50	12	10	10	+	—	DU GU		AV GE	11		Excellent	Excellent
20.	DH	M	41	47	6	6	3	+	—	DU		TV	11		Fair	Fair

DU—Duodenal Ulcer
GU—Gastric Ulcer
SC—Surgical Closure
GR—Gastric Resection

TV—Transthoracic Vagotomy
GE—Gastroenterostomy
AV—Abdominal Vagotomy

Abdominal vagotomy with gastroenterostomy on 5-17-47. X-ray, ten months: Stomach with normal emptying at four hours, no dilatation. Cap deformity without active duodenal ulcer. Follow-up, ten months: Some belching, fullness.

Case 6.—JK 54M. Pain, nausea for fourteen years. Duodenal and gastric ulcer diagnosed for four years. Medical treatment for two years. X-ray: Active duodenal ulcer, cap deformity. Prepyloric ulcer, pyloric spasm. Transthoracic vagotomy on 2-20-47. X-ray, four months: Stomach with retention, 1 per cent emptying at four hours, atonic, pylorus with complete mechanical obstruction. Eleven months: Stomach with retention, 40 per cent emptying at four hours, tone good, peristalsis very shallow. Twelve months: Stomach with 50 per cent emptying at six hours, peristalsis shallow, pylorus irregular, gastric ulcer. Cap deformity without active duodenal ulcer. Pleural thickening. Follow-up, twelve months: Some pain, persistent nausea, vomiting, diarrhea, fullness, distress. Gastric resection on 2-11-48. Prepyloric ulcer found perforated. Feeling well since.

Case 7.—AS 71M. Pain, distress for nineteen years. Gastric ulcer diagnosed for eight years. Medical treatment for one year. Perforation in 1945 with surgical closure. X-ray: Gastric ulcer on lesser curvature, hypertrophic gastritis, pyloric spasm, marked retention with 10 per cent emptying at four hours. Cap deformity without active duodenal ulcer. Abdominal vagotomy with gastroenterostomy on 4-2-47. X-ray, ten months: Stomach with 90-95 per cent emptying at four hours, slight dilatation. Gastroenterostomy functioning well. Follow-up, ten months: Feeling well.

Summary and Conclusions

The entire series consists of twenty patients studied from four to twenty-five months postoperatively. On the basis of x-ray evidence of healing of the ulcer and gastric motility, the relief of symptoms, the development of gastrovisceral complications and the general well-being of the patient as a whole, the result in each patient is estimated as excellent, good, fair or poor. The x-ray findings of the stomach and duodenum were found, on the whole, to correspond closely to the patient's state of health, and these objective findings are therefore taken as more reliable criteria in the evaluation of the results. On the other hand, the psychic factor in peptic ulcer plays just as important a role as in other diseases. How the patient himself feels before and after operation therefore deserves due consideration.

In fifteen patients with duodenal ulcer preceding transthoracic vagotomy, the results were excellent in six, good in seven and fair in two. One of these patients with a previous gastroenterostomy and a revision of the gastroenterostomy, which was nonfunctioning at the time of his admission for vagotomy, has a good result after

the operation. In two patients with psychoneurosis the result was good in one and fair in the other. One patient with duodenal ulcer was treated by abdominal vagotomy and another by abdominal vagotomy with gastroenterostomy. The results were good in both instances.

Abdominal vagotomy together with gastroenterostomy was performed on two patients, one with gastric ulcer and the other with both gastric and duodenal ulcer. The results in both cases were excellent, but the indication for vagotomy is questionable. Transthoracic vagotomy was performed on another patient with both gastric and duodenal ulcer. The result was poor. A prepyloric ulcer which had perforated was found during a subsequent gastric resection.

From the study of this series, it is evident that vagotomy is indicated in duodenal ulcer, and the results are favorable. On the whole, the surgical morbidity is low. The ulcer heals readily, and no subsequent operation is usually necessary. The relief of symptoms is definite. A more liberal diet is tolerated and the resumption of normal daily activities follows.

The incidence of pulmonary and gastrovisceral complications is high. But, as far as could be determined, they seem to be of no serious import and tend to disappear in the course of time.

Vagotomy is contraindicated in gastric ulcer because of the possibility of malignancy and perforation.

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RHEUMATIC AND BACTERIAL ENDOCARDITIS

(Continued from Page 1099)

carditis are two separate diseases occurring together in approximately 90 per cent of the cases of subacute bacterial endocarditis, or whether they are different manifestations of one disease.

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CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE STUDY
With Literature Review

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DR. A. H. WELLS: We wish to present a difficult diagnostic problem for your careful consideration. Then, Dr. Joffe will briefly review four additional cases of the disease found in our hospital records and summarize the literature on the subject.

DR. C. H. MEAD: (Case No. 43235) This woman, a business school instructor, was admitted to the hospital at the age of twenty-two on December 15, 1936, because of right lower quadrant pain of two years' duration, with loss of appetite, diarrhea and 5-pound weight loss during the previous two months. In addition, she complained of daily frontal headaches, occasional scotomata and frequent upper respiratory infections. Physical examination at that time was essentially negative. Urinalyses showed nothing unusual. Hemoglobin determination, red blood cell count, white blood cell count and differential count were not done. A preoperative diagnosis of recurrent appendicitis was made and on December 16, 1936, an exploratory laparotomy was performed, at which time a cholecystectomy and appendectomy was done. Pathologic studies revealed cholelithiasis, chronic cholecystitis and a normal appendix.

The patient was again admitted on June 4, 1948, with a history of crampy right lower quadrant pain, malaise, and diarrhea which had persisted since her operation in 1936. The foregoing symptoms had been gradually becoming more severe with four to five bowel movements daily and a weight loss of approximately 6 pounds since January of 1948. Only on one occasion, Christmas of 1947, did she notice some blood in the stools. In addition, she complained of occasional difficulty in swallowing, dizzy spells, and some backache. The patient appeared to be emotionally immature, living with two sisters and one brother, all older than herself and all unmarried.

Physical examination revealed a slight fever of 99.2 degrees, with mild but diffuse tenderness on deep palpation of the right lower quadrant. Urinalyses were essentially negative. The hemoglobin was 11.5 grams, with a red blood cell count of 4,060,000. The white blood cell count was 14,700 with 76 per cent neutrophiles. The sedimentation rate (Westergren) was 77 mm. per hour. The Kline test was negative. A chest plate revealed nothing unusual. An intravenous pyelogram revealed a reduplication of the left kidney pelvis and the proximal end of the ureter, with moderate ptosis of the right kidney. A barium enema, with films made during fluoroscopy as well as before and after evacuation of the enema, revealed the barium to pass through the entire colon. The terminal ileum was not visualized at this time. There was a localized, persistant deformity of the cecum in the region of the ileocecal valve (Fig. 1). There also appeared to be a distortion and deformity in the mucous membrane pattern. Films made four and six hours later seemed to indicate that the terminal ileum was reasonably normal. An upper gastrointestinal series revealed nothing unusual. The roentgenologist concluded that the deformity in the region of the cecum was probable carcinoma.



Fig. 1. Print of roentgenograph showing defect in cecum.

DR. A. H. WELLS: The case is now open for diagnoses.

PHYSICIANS: Carcinoma of the cecum, actinomycosis of the appendix and cecum, tuberculosis of the cecum, amebic granuloma, ulcerative colitis, regional ileocolitis and pelvic tumor.

From the Department of Pathology and Intern Training Program, St. Luke's Hospital, Duluth, Minnesota.

Dr. A. H. Wells: Dr. Moses Barron is right. This is a case of regional enteritis. What led you to make this diagnosis?



Fig. 2. Mucosal surfaces of terminal ilium and adjacent cecum.

Dr. M. Barron: Carcinoma is very unlikely because of the twelve-year history of symptoms. Actinomycosis and tuberculosis are possibilities, but the course of the disease does not fit either one. The patient's age and duration of such symptoms as lower abdominal cramps, diarrhea, weight loss and anemia points to a diagnosis of regional enteritis.

Dr. C. H. Mead: The patient was prepared for operation, which was performed on June 24, 1948, at which time a resection of the terminal ileum, cecum and a portion of the ascending colon was performed. The patient appears to be cured to date.

Dr. A. H. Wells: The specimen consisted of a segment of terminal ileum, measuring 14 cm. in length, and a 13 cm. segment of ascending colon with the cecum (Fig. 2). There was a diffuse hard, rubbery, thickening of the wall in the terminal ileum, beginning 5.5 cm. from the ileocecal valve and extending onto the cecum to involve the adjacent 3 cm. of the latter. The mucosa of the involved terminal ileum and the cecum had a roughened heaped-up, cobblestone appearance with no evidence of ulceration or tumor masses. The attached mesentery revealed several firm lymph nodes measuring from 0.3 up to 0.9 cm. in diameter.

The microscopic examination revealed almost complete destruction of the mucosal glands of the ileum, which were replaced by very cellular and congested, vascular scar tissue with dense lymphocytic, plasma cell and neutrophilic infiltration in all layers (Fig. 3). There was some hypertrophy of the mucosal glands in the cecum with no evidence of malignancy. Sections from the lymph nodes revealed both acute and chronic inflammatory changes. A diagnosis of regional enterocolitis was made.

Discussion

Dr. H. H. Joffe: We wish to present briefly four additional cases out of 93,145 admissions to this hospital from January 1, 1936, to August 1, 1948. These cases beautifully illustrate the difficulty in differentiating regional enteritis from acute appendicitis, intestinal obstruction and ulcerative colitis.

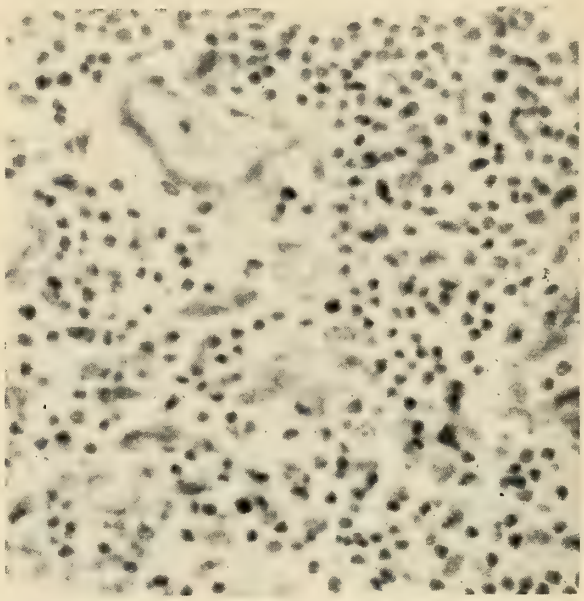


Fig. 3. Photomicrograph of nonspecific vascular granulation tissue in mucosa of ilium.

Case No. 39068.—A twenty-one-year-old waitress with a history of intermittent crampy upper abdominal pain and malaise for five weeks duration was placed on an ulcer regime with some relief of symptoms for a few days. While on her way to work one morning, she was seized with severe abdominal pain radiating into the right lower quadrant. There was also giddiness, weakness, nausea, vomiting and profuse perspiration.

Physical examination revealed diffuse tenderness and rebound tenderness in the right lower quadrant. There was a slight fever of 99.6° F. The hemoglobin was 11.5 grams, with a red blood cell count of 4,370,000. The white blood cell count was 27,250 with 90 per cent neutrophiles. The urinalysis was negative.

A laparotomy for acute appendicitis was performed. The appendix was found to be normal and was not removed. A remarkably thickened, firm terminal ileum was resected with an end-to-end anastomosis. There has been no recurrences of regional enteritis after one year and three months.

Case No. 43074.—This twenty-two-year-old woman gave a history of crampy intermittent abdominal pain, weight loss of 30 pounds and diarrhea amounting to five bowel movements a day, all of a year's duration. There was occasional vomiting, and one evening she experienced sharp lower abdominal pain, nausea and vomiting, and over a period of five days there was no passage of fecal material.

Physical examination revealed an emaciated female with visible peristaltic waves in the upper abdomen.

There was moderate generalized rigidity and marked tenderness and rebound tenderness. There were no palpable masses. The hemoglobin was 11.5 grams with a red blood cell count of 4,620,000. The white blood cell count was 14,750 with 81 per cent neutrophiles. The urinalysis was negative.

An ileocolostomy was done because of the patient's poor condition. There was a cicatricial mass in the lower ileum with proximal dilated viable bowel and no "skip areas." A resection with an end-to-end anastomosis was done at a later date. The patient has now been free of symptoms for two and a half months.

Case No. 40796.—This thirty-eight-year-old man gave a history of episodes of diarrhea and lower abdominal crampy pain for five years duration. The episodes of diarrhea occurred about three times a week with ten to twelve stools daily, but there was never any blood or mucus. There had been an appendectomy several years before.

Physical examination revealed tenderness in the right lower quadrant with a fever of 99.8° F. There was no anemia. The white blood cell count was 14,950 with 77 per cent neutrophiles, and the sedimentation rate was 49 mm. per hour (Westergren). The urinalysis was negative. A chest plate was negative and a gastrointestinal x-ray study led to the conclusion of regional enteritis involving the terminal ileum.

A short circuiting procedure was done, with a resection at a later date. The patient has been free of symptoms for nine months.

Case No. 17493.—This fourteen-year-old girl gave a history of diarrhea with several bowel movements during the day and night for the past three months. There was loss of appetite with a loss of 15 pounds in weight. Two months prior to admission there were episodes of vomiting which occurred two to three times a week, usually after meals. One day prior to admission she experienced cramp-like upper abdominal pain which was located to the left of the umbilicus.

Physical examination revealed an undernourished and dehydrated girl, with abdominal distension and tenderness to the left and slightly below the navel. There was no fever or anemia. The white blood cell count ranged up to 13,300 with 88 per cent lymphocytes. Stool examinations revealed no ova, parasites or acid fast bacilli. There was, however, 1 to 2 plus occult blood with moderate numbers of pus cells and mucus. The urinalyses were negative. A chest plate was interpreted as negative, and a gastrointestinal series revealed a negative colon and terminal ileum.

The patient was closely observed for several days, and an exploratory laparotomy was done with a resection of the terminal ileum and a lateral anastomosis. There has been no recurrence of symptoms for twelve years and four months.

Terminology and Etiology

Dr. H. H. Joffe: The nomenclature is confused by such multiplicity of terms as regional ileitis, regional enteritis, terminal ileitis, acute and chronic ulcerative ileitis, phlegmon of the ileum, nonspecific ileocolitis, chronic interstitial enteritis, ileocecal pseudotumor, infective granuloma, sclerosing and stenosing ileitis, nonspecific intestinal granuloma, Crohn's disease, cicatrizing enteritis and a host of others. The term regional enteritis has been accepted widely for many years and is nonspecific as to location and etiology, all desirable features for general acceptance until the etiology is known.

A lack of knowledge of the causative factor is essential to a diagnosis of this clinical entity.[30] Practically all types of agents have been incriminated, such as: B. coli,[19,34] B. dysenteria,[40] anaerobic streptococci,[35] Aerobacteria aerogenes,[25] tubercle bacillus,[40] Mycobacterium Johnei,[51] bacterial toxins,[20] viruses,[48] Entamoeba histolytica,[11] parasites,[2] achylia gastrica,[40] allergy,[32] trauma,[33] nonspecific inflammation of the appendix,[41] impairment of blood supply[5] and interference with the lymphatic supply.[42] In spite of the heterogenous group of agents, no specific organism or single etiological factor has yet been recognized.[4,40]

Incidence, Sex and Age

Brown and Donald[6] reported a total of 178 cases seen at the Mayo Clinic between 1922 and 1940 with 114 cases in the four-year period between 1937 and 1940. Fallis[21] found one case in 195,000 admissions to the Henry Ford Hospital during the fifteen-year period prior to January 1, 1933, and thirty-two cases out of 180,000 new patients during the ten-year period between 1933 and 1943. The foregoing signifies either an increase in the incidence of the disease or perhaps a sharper clinical recognition.

The disease affects principally young adults with approximately equal sex distribution in two large series[6,34] totaling 233 cases. However, in a review[40] of 393 cases in the literature, 56.6 per cent were males and 43.5 per cent were females. By combining two large series[6,34] totaling 233 cases, we find 78.1 per cent occurred under forty years of age, which closely corresponds with 79 per cent in another review of 382 cases in the literature.[40]

Pathology

The pathologic changes vary with the stage of the disease. They consist primarily of ulcerative, exudative and proliferative inflammatory stages resulting in a cicatrizing granuloma with obstruction or fistula formation.[1,3,4,7,12,14,28,34,37,39,45,46,47]

In the early stage of the disease, the segment of bowel is hyperemic and swollen. The serosa is blotchy or granular, bleeds easily, and may be covered with a plastic fibrinous exudate. The mesentery is likewise edematous, thickened and inflamed, with enlargement of lymph nodes which may form various sized tumor masses. Areas of normal bowel between sharply defined diseased segments, the so-called "skip areas," may be present. The mucosa reveals ulcerations which are usually located along the mesenteric border and lie in the long axis of the intestines.[14,39,46,47] As the disease progresses, the submocosa and, to a lesser extent, the muscularis are the seat of marked inflammatory, hyperplastic and exudative changes, with edema, fibrosis and lymphocytic

infiltration which result in an enormous thickening of the bowel wall, producing a rubber hose consistency. These changes are finally replaced by a fibrostenotic process, with narrowing of the lumen and dilatation of the proximal segment of the bowel. The serosa may exhibit tubercle-nodule-like structures which are often mistaken for tuberculosis. These lesions are described by Warren and Sommers[49] as being diagnostic and are found in the mesentery, lymph nodes and liver as well as throughout the involved segment of gut wall. The mesentery of the affected segment is greatly thickened and fibrotic. The mucosal ulcerations tend to perforate with resultant abscesses and fistula formation.[1,7,12,14,28,37,39,46,47] The latter may communicate internally with adherent loops of bowel or bladder, or externally with the skin surface through the abdominal wall, or any combination may result.[39]

There are no specific microscopic features in the various stages except varying degrees of acute and chronic inflammation with variations in the predominence of neutrophiles, lymphocytes, mononuclear cells, plasma cells and fibrocytes. In the earlier stage, the lesion is more diffuse, involving mainly the mucosa and submucosa. In the latter stages the inflammatory reaction is more focal in character. The presence of giant cells is quite striking in some cases and is probably responsible for the erroneous diagnosis of tuberculosis.[14]

The terminal ileum is by far the favorite site of involvement, but any part of the bowel from the jejunum to the sigmoid may be affected. In one series[50] of 131 cases, 75 per cent involved the terminal ileum, while in another series[6] of 178 cases, the lower part of the ileum with extension into the colon constituted 92 per cent of the cases. In a review of the literature[40] totaling 462 cases, the terminal ileum was involved alone or with extension into the cecum and ascending colon in 79.6 per cent of cases. On rare occasions the lesions are found in the jejunum, cecum, and ascending and transverse colon alone or in combination with involvement of the ileum.

Symptoms and Signs

The clinical picture may be divided into four stages: (1) acute, (2) irritative,[31,39] (3) obstructive and (4) fistula.[3,4,12,14,15,21,47] The acute stage is often diagnosed as appendicitis because of right lower quadrant pain and tenderness, nausea, vomiting, fever and leukocytosis. In two series[9,28] totaling ninety-four cases, a previous appendectomy had been performed in 40 per cent of cases. In the irritative stage, the symptoms of crampy diarrhea, with blood and mucus in the stool, frequent attacks of colic, low grade fever, anemia, inanition and weight loss, simulate ulcerative colitis and may be present over a long period of time. Not infrequently, a boggy abdominal mass can be palpated in the right lower quadrant.[39] Remissions are rather common in the first two stages.[3] As the fibrostenotic process increases, the symptoms of severe abdominal cramps, borborygmi, distension with an increase in the severity of the anemia and more prounounced weight loss, complete the clinical picture of the third or obstructive stage. Complete obstruction is rare, but obstructive phenomena are present at some time during the course of the disease in about one third of the cases.[21] Dickinson and Zimmerman,[15] however, reported a case of acute intestinal obstruction in the absence of any antecedent history of abdominal disease. The fourth or intractable fistula stage is often referred to as a sequela or complication.

In an attempt to summarize the frequency of the various symptoms, we have taken the liberty of combining four series[9,28,30,44] totaling 256 cases, with the results found in Table I.

TABLE I. SYMPTOMS

Symptom	*Number*	*Percentage*
Abdominal pain	212	82.8
Weight loss	186	73.4
Diarrhea	143	55.8
Fever	139	54.3
Palpable abdominal mass	127	49.0
Anemia	104	40.6
Fistulas	64	25.0

The duration of symptoms varies greatly, and in a series[44] of 55 cases, varied from one month to fifteen years, with 52.7 per cent having had symptoms for less than one year.

Diagnosis

The diagnosis of regional enteritis can only be made by a thorough investigation of the gastrointestinal tract.[7] The symptoms of recurrent attacks of abdominal pain, diarrhea, weight loss, chronic partial intestinal obstruction, accompanied by a persistent low grade fever and anemia, especially in young individuals, are strong clinical proof.[24,46] Roentgenologic studies can usually confirm the clinical diagnosis and are repeatedly referred to as the most important single diagnostic aid.[6,7,8,12,28,29,31,39,46,47] In one series[6] totaling 178 cases, a barium enema revealed evidence of the disease in 124 cases, with seven additional cases diagnosed by a barium meal for a total of 131 (74 per cent).

Kantor[29] states that the following are the chief roentgenologic signs:

1. A constant filling defect in the ileum just proximal to the cecum.
2. An abnormality in the contour of the last filled loop of ileum.
3. Dilatation of the ileac loops just proximal to the lesion.
4. The presence of the "string sign" which appears as a thin slightly irregular linear cotton string like shadow, extending from the region of the last visualized loop of ileum through the entire extent of the filling defect and ending at the ileocecal valve.

The "string-sign" of Kantor, though characteristic, is not pathognomonic and may be present in other stenosing processes.

Regional enteritis is often confused with and must be differentiated from appendicitis, tuberculous enteritis, ulcerative colitis, amebiasis, bacillary dysentery, diverticulitis, Meckel's diverticulum, neoplasm of the ileum, sprue, parasitic infections, actinomycosis, syphilis, car-

cinoma and lymphoblastoma.[1,7,8,12,14,16,28,31,34,38,39,40,46] A carefully taken history and a thorough physical examination, aided by roentgenographic studies, sigmoidoscopic examination and laboratory tests, will usually result in a correct diagnosis.

Treatment

The method of treatment varies somewhat with the stage of the disease. In the presence of an acute process or exacerbation it is unwise to institute any operative procedure unless there is obstruction.[1,39,47] In the acute stage the diagnosis is often made by abdominal exploration because of the mistaken diagnosis of acute appendicitis. In such cases, if the appendix is not involved, it should not be removed because of the danger of fistula formation.[38] Medical management has little to offer in the more chronic forms and operation is the accepted treatment of choice if a cure is to be expected.[1,6,7,12,14,22,24,30,34,38,40] There is, however, some difference of opinion as to the method which should be employed. Involvement of the lymph glands and failure to recognize the characteristic "skip areas" are the chief source of recurrences.[22,34] It, is therefore, essential that the surgeon examine every inch of the intestine before attempting any surgical procedure.

In a review of the literature,[40] out of 290 cases in which a resection was done, 67.0 per cent showed a complete recovery, 5.8 per cent had partial recovery, 3.8 per cent showed no improvement, and there were 6.2 per cent recurrences, with 7.2 per cent deaths. In eighty-eight cases in which a short circuiting procedure was done, 30.6 per cent completely recovered, 11.3 per cent showed a partial recovery and 5.7 per cent had no improvement; however, there were 28.4 per cent recurrences and 7.9 per cent deaths.

It is quite obvious from the foregoing data that the recurrence rate is considerably less when a resection is done regardless of whether it is a one-stage or two-stage procedure. The mortality is less with a resection than with a short-circuiting operation. Furthermore, the percentage of complete recovery is greater with a resection. These conclusions are not agreed to by all authorities.[22]

Summary

We have presented five cases of regional enteritis and a concise review of the literature.

The preoperative diagnoses in the five cases included acute appendicitis, carcinoma of the cecum, intestinal obstruction, ulcerative colitis, and tuberculous enteritis. They were apparently cured by resection of the involved area with no recurrence of symptoms over a period varying from one and a half months up to twelve years and four months.

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History of Medicine In Minnesota

NOTES ON MEDICINE IN FREEBORN COUNTY, 1857—1900

ANDREW GULLIXSON, M.D.
Albert Lea, Minnesota

(Continued from September issue)

He then also writes of the county seat contest between Albert Lea and Itasca, in which "Dr. A. M. Burnham, who possessed rare energy and enterprise, was the genius of the place." This was a contest which was to be settled by a horse race between the Itasca Fly and Albert Lea's Old Tom. He relates:

"The race track was made on the smooth prairie, with two paths this time and so far apart that it was supposed Old Tom could not jump across into the Itasca Fly's track again. This time Old Tom had a rider. When the word was given Old Tom made for his antagonist's track and gained the lead, and when the pole was reached Old Tom was given the race by forty feet. Itasca folk had bet everything they had on the race. Those who lost their money and their cattle, horses and plows, chairs, pigs, chickens and knives, coats and hats, and guns and boats, began to get tired of Itasca and its sure thing, and voted for Albert Lea. The county seat question was settled by Old Tom, and Itasca collapsed as a townsite.

"In 1857 people got 4 pounds of brown sugar for a dollar. Syrup was $1.50 a gallon and salt ten cents a pound. Those who had traps sold coon skins for $3.50 to $4.00 apiece, muskrat skins for forty cents, and mink skins for $3.50. I remember our folks borrowed a setting hen long enough for her to hatch. There were swarms of mice and no cats. I remember an acquaintance allotted one to us from an expectant that gave promise of a small supply. When the word came, I (eleven years old) walked after it. I was not invited to dinner and so I walked the twenty-five miles on an empty stomach.

"It was considered proper to steal wood from the land speculators and from government lands. A neighbor of ours became discouraged on account of the depredations of the blackbirds and left his farm. One Sunday we went up there to look around and also to pick strawberries. The people from the prairie were thick as hops. Axes, crosscut saws, crowbars, and hammers were all doing their best. D-.R.- and Dr. Burnham got the best of the plunder, and those old veterans took plain saw logs."

The account goes on to tell of Indians coming off their reservations and striking camps in the settlements and proceeding on begging and stealing expeditions, and how an old trapper who knew how to handle them would roughly break them up.

"When the Rev. McR- preached, every one attended though everything was primitive in the extreme. On one occasion old Charles M., who was drunk, attended the meeting. Rev. McR- had told a story about a boy to illustrate some point. Old Charley wanted to know what had become of the boy, and called in an excited voice, 'I will give you a half a cheese if you will tell me what became of that boy.' The good man stopped his sermon and told old Charley the story. On another occasion, when the minister had assigned the hymns and the audience had sung them in a key a few octaves too high, he announced his text, and they sang that, too, in the same high screechy chord. This made the royal old man smile but it did not disturb him."—*Standard,* May 11, 1900.

In many instances the professional education of the early pioneer doctor was obtained by reading and practicing under a preceptor. On the preceptor's approval his pupils would begin their own private practice. After the license law was passed

in 1883, these prospective doctors usually attended medical schools and received certificates. The leaders in pioneer medicine, those who had taken both preliminary academy and college courses and held degrees from the leading medical schools, attended with surprising regularity the Minnesota State and the American Medical Association meetings. Medical ethics were held in high regard by these noble gentlemen, and they must have been masterful and dignified in council and at the bedside. They knew the art of medicine, their pharmacology, and their therapeutics. Their armamentarium, both as to proven drugs and surgical instruments and appliances, was of course, limited. The keen rivalry of the different schools—eclectic, homeopathic, and allopathic—had brought to light many effective tricks in compounding the indicated and delicately balanced medicaments. The king and the queen of all medicines were used in the early day in the form of laudanum and the infusion of leaves of digitalis. Laudanum with whisky was used liberally as an anesthetic in minor surgery and for extraction of teeth by turnkey. Infusion of digitalis was prescribed, with or without blue mass, when indicated and was continued until it resulted in a "puke or a purge." After stropping it on his boot, a doctor would use his jack knife, on occasions, to open an offending abscess and likewise for a hurried trachectomy.

Transportation in the early days was a problem for the pioneer doctor. A saddle-horse, with saddle equipped with saddlebags for drugs and supplies, was used if destinations led toward passable roads for horse and rider; otherwise, the lurching ox-cart was used. Later, with improved trails, the doctor would drive a span of horses hitched to a buckboard; and finally, he was spinning over country roads in an elegant covered buggy, drawn by a span of well-bred, spirited horses.

There were many deaths and injuries caused by the explosion of lamps from excessive residual gas in the kerosene. Injuries or deaths from runaways, freezing, drowning, suicide, and insanity were not uncommon. But the greatest tragedies were those resulting from preventable diseases, such as diphtheria and scarlet and typhoid fevers. One who has never entered the room of a typhoid fever patient, defenseless against flies, on that long lonely road for weeks, lying dehydrated in muttering delirium, with a distended rose-spotted abdomen and nervous twitching wrist with its soft dicrotic pulse, and a foul-coated tongue, has missed, fortunately, an unforgettable experience.

From the time of the panic of 1857 to the issuing of stable greenback currency at the beginning of the Civil War, there was no money. Immigration continued in increasing numbers, but the new settlers were, for the most part, penniless. Barter was the only means of trade. No doubt the pioneer paid in part his delinquent doctor bills by bringing him dabs of butter, eggs, hay, oats, and corn, and skins of mink, coon, and muskrat, or perhaps a bundle of home-carved ax-handles which the doctor could dispose of in his drug store. But usually his accounts remained unpaid through the years.

Largely for these reasons, nearly all the early pioneer doctors owned and operated drug stores as well as large farms. A few became enthusiastic breeders of cattle and swine and particularly trotting horses, both for racing and for use on the roads.

The leaders among the very early pioneers came from the East and were usually well educated. Academies and colleges in those days subjected their students early to the old classics and to the best in English literature. It is easily discerned from their speeches and their contributions to the press that they had dipped deeply into the ethereal spring. Some of them, including doctors, were orators who could make the king's English walk in majesty and grace. Some well-educated farmers,

too, could deliver Fourth of July orations that would stir the soul. The weekly newspapers carried full page chapters of installments of the best novels, as well as columns on current events. In the absence of libraries in those days, anyone with a dictionary could help himself to a lot of satisfactory amusement, as well as a very good knowledge of the English language, by spending a part of the long winter evenings in this pursuit.

Dr. A. C. Wedge, in his tribute to the Hon. William Windom, late Secretary of the Treasury, in a beautifully written encomium, not only portrays the outstanding character, rugged honesty, and integrity of his old friend, but he also reflects the same in himself (*Albert Lea Enterprise,* February 5, 1891).

The early men of medicine were versatile. They were civic-minded leaders. Inured to hardships themselves, they never forgot to extend a kindly comforting hand to the despairing, nostalgic mother and family of the struggling immigrant in times of stress. They were ministers, counselors, psychiatrists, lawyers, bankers, and doctors all in one. Their hearts were in medicine and dutiful service. Their hobbies were politics, farming, and stock breeding. Their amusements were travel, reading, memberships in scientific and literary societies, hunting, fishing, and fast-trotting horses. The gospels of Pasteur, Lord Lister, Koch, Klebs, Loeffler, Virchow, Bilroth, and famous men of more recent years were not theirs to turn to and contemplate; and they stood as helpless before the ravages of diphtheria, scarlet fever, and typhoid fever as they did before the storms, blizzards, and grasshoppers. They drew a tough assignment in a tough place. They redeemed the pledge they had made.

"The man who is able to put all he owns on earth into one canvas-covered wagon—wife, children, household goods, all—and move with slow pace into what has been called the Wilderness of the West, is doing a work for himself, his family, for civilization, his country, and his God that can never be fully known or its influence told, until the final disclosure."—Senator C. S. Pomroy, Kansas, May 5, 1862.

Public Health and Sanitation

After the legislative act of 1872, setting up a State Board of Health and Vital Statistics, we find in the board's report that the number of births in that year was 322. Of these, 164 were Norwegians; seventy-nine, Americans; fourteen, Germans; thirty, Danes; twenty-six, Irish; three, Swedes; two, English; and four, Canadians.

In 1874, there was an epidemic of smallpox, scarlet fever, and typhoid fever. In 1873 a case of leprosy was treated by Dr. J. Froshaig, and records reveal that with the assistance of Dr. Wedge he amputated a part of a patient's foot.

The following is a notice from the department of the State Board of Health dated April, 1874:

"To the Albert Lea Board of Health: Please keep me informed of diseases prevailing and of sanitary work in your district. May I suggest careful sanitary survey of your town including water supply, wells, springs, and to see that they are not contaminated. The Board suggests that you collect regular statistics of births and deaths in accordance with registration laws."

In January, 1891, city physician H. H. Wilcox reported thirty-two deaths, itemized as follows:

"Consumption, nine; pneumonia, four; membranous croup, three; cancer of stomach, two; meningitis, one; appoplexy, one; typhoid fever, two; puerperal sepsis, one; paralysis of the brain, one; unknown, five; total, thirty-two. Of these, seven were over fifty years of age."

Report on "Vital Statistics" for 1895:

"Deaths, native, 105; Norway, thirty-three; Denmark, seventeen; Germany, five; Ireland,

eight; Sweden, two; England, two. Cause of death: consumption, ten; heart disease and pneumonia, eighteen; inflammation of the bowels, seven; diphtheria, seven; cancer, six; appendicitis, four; typhoid, three; meningitis, three."—*Enterprise,* January, 1895.

Dr. Ludvig Hektoen in collaboration with a historian in *Studies and Records* (vol. 1, pp. 19-21), has this to say about infectious and contagious diseases among Norwegian immigrants: "Their spread was advanced by the unsanitary conditions and practices of many of the early pioneer settlements, where nothing was done to disinfect or properly dispose of the highly infectious discharges. Not even outhouse toilets were in use in the early days on the frontier; windows were not screened; few pioneers dug wells, and those who did, oridinarily made very shallow ones; water was taken from streams and springs or lakes, stored in barrels and often contaminated." Dr. Hektoen and his collaborator relate that among the Norwegian immigrants "not only malaria and cholera, but many other kinds of diseases, were prevalent in pioneer settlements, including pneumonia, typhoid fever, and tuberculosis." "One of their most interesting gneralizations is that "Fewer (Norwegian) persons seem to have died of tuberculosis in those early days than later," and they conclude that this high mortality rate among the Norwegian people in America, even up to our own day, is probably the heavy penalty for the poverty, squalor, and hardships of pioneer days." These observations are entered here because immigrations to Freeborn Country from very early days have been preponderantly Scandinavian.

In 1874 there was an epidemic of smallpox, scarlet fever, and typhoid fever. In 1881, a smallpox epidemic occurred and isolation was ordered.

"Scarlet fever, a severe epidemic. Three children in one family succumb. It should be noted that scarlet fever is equally contagious as smallpox. It is readily communicated through clothing and for a considerable distance in the air. Greatest care should be exercised to keep patients isolated and prevent all visitors except physician—Board of Health."—*Standard,* August, 1881.

The 1887 session of the legislature provided for reports of vital statistics and also enacted the first meat inspection laws:

"Each local board of health to set up an inspection service to pass on cattle, swine, and sheep, twenty-four hours before slaughter and to certify same for human consumption."

Reports in the newspapers show that on one day in 1870 seven hundred teams of oxen and horses were counted on the streets of Albert Lea. The custom was to unyoke and unhitch on the streets, and tie the animals to the wagons, supplied with hay and feed. The decomposition and filth from all the litter on the streets was unbearable, and the muck in the streets rendered them almost impassable. The Board of Health ordered the segregation of teams away from the main streets, passed ordinances relating to carelessly constructed privies, made provisions for safer dumping grounds, and declared the drainage from these to be a nuisance. Perhaps this mounting offense to sight, smell, and general transportation was what induced the rugged editor at that time to spew this one, which also involved a serious health problem:

"We do not have many rattlesnakes in this section, but we do have any amount of whisky. For fear they may take a trip over here, note that it would poison a rattlesnake if one bit some men we know around here."—*Enterprise,* April, 1874. "The smell from the dumping grounds this side of the old mill is anything but pleasant to the olfactory nerves. Those who have charge of the matter are exceedingly derelict of duty."—*Standard,* July, 1891.

Not until May, 1894, was a petition made by the Board of Health for public dumping grounds in Albert Lea. In 1894 Dr. J. M. Todd, president of the board, pronounced the slaughterhouse and packing facilities to be a nuisance the way they were operated. There being no sewers provided, it was impossible to run it in a cleanly manner, and he advised that it be moved outside the city limits.

In May, 1893, at the request of Dr. J. M. Todd, president of the Board of Health, Dr. C. N. Hewitt, president of the Minnesota State Board, visited Albert Lea. He investigated the sanitary conditions of the city and inspected nuisances about which there were complaints. A public meeting was held to listen to an address by him. "With pungent facts, forceful argument, and key wit, he proceeded to show how cholera, smallpox, and similar diseases were brought to America, and how easily they spread. He made clear the thoroughness now being adopted by national and state officials in regard to vaccination. He also made a plea to abolish privy vaults and cesspools. The city should no longer permit them in our midst. He advised against sewage being emptied into either of the two lakes."—*Standard,* May 17, 1893. There were no regular county physicians in Freeborn County's early days. The poor were attended by local physicians, who presented annual bills to the County Commissioners. During the first half of the 1870's, the total annual payments averaged from 150 to 250 dollars. The epidemics of diphtheria, scarlet fever, and typhoid fever through the 1870's and 1880's were at times frightening in their ravages. A pioneer physician told the writer forty-five years ago that it was his honest belief that antitoxin in cases of diphtheria in those days would have been unavailing because of the severity of the disease, with deaths often coming in twenty-four to thirty-six hours.

Hospitals

Not until 1894 was any attempt made to provide hospital facilities. In that year Dr. J. M. Todd publically advertised for hospital purposes, "a building thoroughly equipped with trained nurses, electric and medical baths, and every convenience for treating chronic and surgical diseases." The following year, 1895, Dr. Frank A. Blackmer erected a building on his residential property, where he equipped and operated a ten-bed hospital.

"A public meeting was called in the courthouse to see what could be done about building a public hospital. Dr. A. C. Wedge was chosen president and Dr. H. H. Wilcox, secretary. Dr. J. M. Todd stated that all physicians in the city wanted such a public hospital, and Dr. Wilcox thought that a public hospital was an absolute necessity. All favored purchasing Dr. Todd's hospital with its ten beds, and a committee was selected either to purchase Dr. Todd's hospital or make arrangements for procuring another."—*Enterprise,* November 19, 1896.

Nothing came of this venture, and in August, 1897, Dr. Wilcox equipped a part of his large residence and operated his own private hospital. In the meantime, Dr. J. M. Todd in April, 1897, sold his fine hospital and went to New York City to enter the business world. But even as Dr. Todd sold his hospital, another was being built under the direction of Dr. Henrik Nissen. He erected a large three-story brick building on south Broadway in Albert Lea, well constructed with accommodations for a large pharmacy on the ground floor and offices, operating room, and about twelve beds on the second and third floors. Thus in 1898, Albert Lea was provided with three private hospitals. In March, 1898, Dr. H. H. Wilcox wrote from Chicago, where he often went to observe and learn, as follows:

"Without doubt Albert Lea ought to have one good general hospital where all physicians might have designated days for operations. Such an institution with physicians organized

into a local society would be of much value to the city, southern Minnesota, and northern Iowa. No one wanted such an institution more than I. Now that I have a good place of my own, I must work to make it pay; and hence, my attendance here now."—*Enterprise*, March, 1898.

These small hospitals served the most pressing needs, but they did not prove financially successful and were abandoned by 1905. In December, 1905, a meeting of citizens was called to consider the hospital project. The result was the organization of the City and County Hospital Association, with a board of directors given power to act. Funds were raised and the Wilcox hospital was taken over on a rental basis for a period of five years. In the meantime the campaign was on, public interest was surprisingly great, and early in 1912 the Albert Lea general hospital project was solved for the immediate present by moving all patients into the new Naeve Hospital of the City and County. Its name was derived by reason of a generous gift of home and grounds from a wealthy widow, Mrs. Naeve. At this writing a new addition is being completed which will supply one floor for surgery and approximately sixty beds, giving a total of 140 beds.

Education and Health

Early public education provided no instruction relating to health. In 1857 the population of Albert Lea was 285 and the total of the county was 2,486. The Albert Lea district provided a levy of $400 for a school building. Sixteen rural districts were organized in 1857. Some townships had several; others, none; but in almost every settlement schools were sustained in a private way. In October, 1857, the records show the total school funds available to be $398.96, or exactly $1.70 for each pupil. Compared with the school programs of today it reveals a sorry situation.

Knowledge as to health had to come from the doctors, either through private consultation or by attendance at forums, societies, and lodges, where they were active leaders. Dr. Elizabeth Stacey afforded active and effective leadership in organizing temperance societies that met regularly and in earnest endeavor and were of much benefit. But to get to their doctors and to these meetings beyond a distance of five miles, transportation by ox-cart required a day and a night's travel for only a good yoke of oxen could travel up to twelve miles in a full day. Hence, for the most part the early rural pioneer was on his own in matters of health. Self-medication was practiced to a high degree and often with great rivalry. To reveal the extent to which this was carried on, the autobiography of a county doctor in 1873 contains the following excerpts that reveal the assumed professional wisdom of some folks in matters of health and disease:

"Deacon Rogers he came to me.
'Wife is going to die'! said he.
'Twenty old women with remedies now
Bother my wife all day through.
Sweet as honey, bitter as gall,
Poor old woman she takes them all.'

"Mrs. Rogers lay in her bed,
Bandaged and blistered from foot to head.
Bottles and saucer, spoon and cup,
On the table stood bravely up.

"Physics of high and low degree;
Calomel, catnip, bone-set tea;
Everything a body could bear,
Excepting light and water and air.

"I opened the blinds, the day was bright;
And God gave Mrs. Rogers light;
I opened the windows, the day was fair,
And God gave Mrs. Rogers air.

"Bottles and blisters, powders and pills;
Catnip, bone-set, syrup of Squill's;
Drugs and medicines high and low;
I threw them as far as I could throw.

"'What are you doing'? my patient cried;
'Frightening death'! I cooly replied;
'Are you crazy'? a visitor said;
I flung the bottles at her head.

"Deacon Rogers he came to me.
'Wife is coming around', said he;
'I really think she will worry through,
She scolds me just as she used to do'.

"All the people have pooed and slurred;
All the neighbors have had their word!
'Your wife,' said I, 'has God's good care
In his remedies, light, water, and air;
All the doctors beyond a doubt
Couldn't have cured Mrs. Rogers without.'

"The Deacon smiled and bowed his head,
'Then your bill is nothing,' he said.
'God's be the glory, as you say,
God bless you, doctor, good day! good day!'"

Medical Societies

Freeborn County was late in promoting the organization of its medical men. Dr. Wedge had, however, called the fraternity together, perhaps under the authority of the forum he founded in 1857 and called the "Albert Lea Senate." The call stated the "purpose of counseling together in good fellowship." October, 1898, the Albert Lea District Medical Association was organized, whose membership comprised doctors of Freeborn County and of Worth and Winnebago Counties in Iowa. Dr. A. C. Wedge was chosen president; Dr. W. H. Jones of Forest City, Iowa, vice president; and Dr. H. H. Wilcox, secretary. Nineteen members were present at the meeting. The membership was later increased by the addition of doctors from Lake Mills and Northwood, Iowa. The Freeborn County Medical Society was organized January 2, 1903, according to the provisions of national, state, and county relationship. Dr. A. C. Wedge was chosen as its first president and served until May, 1907. He was succeeded by Dr. G. W. Barck. He in turn was succeeded by Dr. J. P. Von Berg in 1909, who continued to serve until 1925. Dr. H. H. Wilcox was the first secretary and was succeeded in 1904 by Dr. G. A. Stevenson. As Dr. Stevenson exercised his usual veto and refused to serve, Dr. O. E. Burton was elected. Dr. W. L. Palmer was the first vice president. Total membership at the organization meeting was fifteen.

(To be continued in the November issue)

President's Letter

THE NATION'S HEALTH

The long awaited report from the National Health Assembly, that met in Washington on May 1 to 4, 1948, has finally been published, as released by Federal Security Administrator, Oscar R. Ewing. It is a broad plan and has the endorsement of President Truman, and includes most of the President's earlier health proposals. As was expected, the report as submitted goes beyond the recommendations that had been developed during this four-day conference. Mr. Ewing has also added his own interpretation and recommendations. The document was politically prepared and has been timed so it can be used during the forthcoming campaign, and places compulsory health in the political arena. The report is well-prepared and is packed with governmental health statistics, which the average citizen accepts at face value. Most of the figures are so general that they are misleading and actually could not be supported by scientific facts. After having read the report, one is left with the impression that the Government is going to give the people of our country something for nothing. But, of course, this is never true, as every dollar which is spent by the Government comes from the American taxpayers.

In addition to compulsory health, Mr. Ewing proposes to develop an expanded program of Medical Education, Research, Hospital Construction, Hospital Maintenance, and Community Health Protection. The cost of this proposed program would be boosted to 4.1 billion dollars by 1960, or more than double the present yearly outlay of two billion. Of course, this does not include the cost of compulsory health insurance, which would add many more billions to the taxpayers' bills.

There are several recommendations in the report that one can accept, but as a whole it is unsound and impractical. I would suggest that every physician should secure this report (The Nation's Health—A-Ten-Year Program) and study it carefully. It can be secured from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. The cost is one dollar.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

MORE DOCTORS NEEDED IN THE ARMED SERVICES

WHEN the Selective Service Act of 1948 was being considered by Congress, it was proposed that the medical profession be drafted as a matter of necessity. Protestations on the part of the profession against the drafting of members of the profession, which would have been the first time during either war or peace that such a step was taken, resulted in the omission of this provision. The profession virtually assured the Army that sufficient medical men to care for draftees would enlist voluntarily.

The Selective Service Act of 1948 provides that no individual shall be inducted until adequate provision shall have been made for his proper care, including medical care and hospital accommodations.

The Army Medical Department needs some 6,900 doctors. At present, it has about 3,000, including interns. If sufficient enlistment of doctors is not forthcoming in the immediate future, the draft program will have to be slowed up, and if by the time the next Congress convenes there is a dearth of enlisted doctors, remedial legislation will doubtless have to be considered.

The drafting of doctors should not be necessary in the near or distant future. Thousands of young doctors have been allowed to pursue their medical education at government expense, and while perhaps not legally bound to enlist, they are so bound morally. Further, the inducements from the standpoint of rank and pay have been increased, and interns and residents who enlist are permitted to continue training in either civilian or Army hospitals. Doctors who enlist are commissioned as lieutenants and receive $380.00 a month as pay. Similar inducements are offered by the Navy.

It is reassuring to learn that while the Selective Service Act of 1948 designates men between nineteen and twenty as subject to draft, it seems assured that medical students and interns will be deferred until they complete their training. A certain number of premedical students will also doubtless be deferred to assure the graduation of enough medical students in future years.

Not young doctors alone are desired for enlistment. It is understandable that those who were undergraduates during the war period have not had the experience to handle all the army medical needs. Older and experienced men are indispensable. A continuous new supply is also needed to replace those, both young and old, who are daily retiring.

It can be expected that the profession will respond to the present urgent need so that our record for patriotism, in peace as well as in war, will not be broken.

ARE YOUNG SPECIALISTS DENIED A CHANCE?

WE don't often read the *Woman's Home Companion.* However, our attention was called recently by a full-page newspaper advertisement to an article appearing in the October issue by J. D. Radcliff, entitled "Give the Young Doctor a Break." We yielded to a feeling of curiosity and purchased a copy and read the article. This, of course, was in keeping with the purpose of the advertisement.

An introductory paragraph quotes Dr. Allan D. Whipple, a former president of the American Board of Surgery, as follows: "There is no doubt that these young qualified doctors are prevented from demonstrating their ability in a good number of communities by the failure of local physicians to give these younger men opportunity to practice in the hospital or hospitals in the community. Dean Willard C. Rappleye of Columbia College of Physicians and Surgeons is also quoted as saying that this situation is "the greatest waste in medical manpower and skill in our present system of medical service."

The article goes on to state that a young specialist, denied hospital facilities, is unable to make use of his skill, improve himself through the use of the hospital library, build up his practice or

even support his family. This is perfectly true. It relates how in certain localities certain industrial surgeons employed in war industries were prevented from having hospital appointments for a period of five years on entering private practice. It relates the case of a young surgeon in a Pennsylvania manufacturing town who in his first year of practice performed just eight operations and all were on the wives of physicians. The local profession recognized his skill, but their failure to refer patients to him resulted in his leaving town. This is too fantastic for belief. The supposedly pathetic story of Jim who had spent years in acquiring a top-notch surgical training and his difficulties in finding a location so that he was finally forced to accept a $3,600 job as surgical instructor at his alma mater somehow fails to elicit tears. Somehow one feels the temporary job may lead to bigger and better things.

The entire article is tinged with sensationalism and gives the lay reader the impression that the older members of the medical profession are, as a rule, less skilled than the present-day Specialty Board licentiate and through jealousy prevent the young specialist from competing by preventing him from obtaining hospital appointments to the detriment of the public.

How much foundation there is for the accusation, as far as the country at large is concerned, is difficult to evaluate. We do know that it is common practice for established specialists to take young men under their wing and help them get started. While there are doubtless selfish and jealous doctors, it would seem rather exceptional for them to be able to prevent a young potential competitor from obtaining the use of a hospital simply in order to forestall competition. That this should ever occur is, of course, reprehensible.

While the article smacks of sensationalism and is not a picture of the general setup, it affords food for thought. Do we as individual doctors and as organized medical societies do what we can and should to help the specialist or, for that matter, the general practitioner who hangs out his shingle?

County societies in the past have been so fearful of admitting to membership undesirable members of the profession that they have required a period in some instances of a year of practice or several months of investigation before admitting strangers to society membership. Such perquisites as malpractice insurance, hospital staff membership, appointments as examiners for life insurance companies and the like being dependent on county society membership, such requirements have in the past made the beginning of practice the more difficult. Some societies have corrected such unjust provisions in their constitutions.

To become established in a medical practice has seldom been an easy matter. The great majority of doctors have found the building up of a clientele a slow procedure. It has been said with some truth that the young doctor spends his early years trying to get patients and his later years in trying to sidetrack them. An able and well-trained doctor, be he specialist or general practitioner, cannot as a rule expect the local profession to swamp him with patients from the start nor the local public to be waiting to welcome him with open arms. The specialist who has spent additional years in preparation is conceivably more likely to feel restive at the slowness of what may be a normal growth of practice. The training of too many specialists which, as we have pointed out before, has been going on in recent years, only tends to aggravate the seemingly slow process of building up a practice, and with the increased production of specialists in the near future, the tempo is likely to be still further slowed. We contend that the overproduction of specialists is going to prove "the greatest waste in medical manpower." The production of specialists should be restricted.

In view of the scarcity of hospital accommodations, it is conceivable that a specialist or, even more perhaps, a general practitioner on starting practice and having difficulty in obtaining hospital beds for patients might feel he is being discriminated against by the hospitals. All doctors are having the same experience and are liable to entertain an unjustifiable resentment at a fancied injustice.

Some medical societies have been conscious that they have not been of as much assistance as possible to the young doctors opening an office for the first time in their locality, and the need for remedying the oversight is shown in the case of the Ramsey County Medical Society in Saint Paul. Junior memberships were recently established for these new men which entitle them to all perquisites of membership after a brief period

(Continued on Page 1140)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COUNTY SOCIETIES DEVELOPING "NIGHT CALL" ARRANGEMENTS

Securing of emergency medical aid at night has long been a source of difficulty and misunderstanding between the public and the medical profession. At the urgent request of the American Medical Association, medical societies throughout the country have been studying ways and means of working out the problems involved.

Incidents of failure to locate or secure the services of a doctor undermine the prestige of the profession, it has been shown. Therefore it was suggested that local physicians' telephone exchanges be established or that there be maintained at local society headquarters a system of rotating night duty together with a list of physicians willing to assume that responsibility.

The subject of "night calls" was discussed at the Council on Medical Service meeting last February in Chicago, when the various methods of handling emergencies were discussed.

Although the law does not compel a physician to respond to an initial call, and the code of ethics allows a physician the freedom of choice in whom he will serve, the public nevertheless *"wants a doctor when it wants him."* Because of the demand for service remedial programs are under study, and a good example is the program being formulated by the Northampton County Medical Society, in Pennsylvania. A group of doctors on the staff of Easton, Pa., Hospital* have formulated a statement outlining their views, which seems a sensible approach.

Refusing Calls Dangerous

Refusal on the part of too many physicians to accept emergency calls, particularly night calls, is a dangerous practice and is becoming a wedge in the attack upon private practice of medicine, the Easton doctors warn. Proof that the problem exists, they say, is evidenced in the nationwide propaganda appearing in newspapers and magazines. After due consideration, the doctors concluded that the problem of night calls is, first of all, primarily a problem of practicing physicians in general practice and internal medicine or related specialties, that physicians should personally see that their patients are covered at all times. These doctors suggest the attending physicians inform patients as to whether they will or will not make night calls and thus give their patients opportunity to choose another physician, should they so desire.

When a physician does not or cannot make a call at night, it is his duty to see that another physician sees his patient, either a colleague or a younger man, according to the Easton doctors. They add that arrangements should be made when the attending physician will be away from home for twenty-four hours or longer. Furthermore, they suggest that when a colleague must be summoned, that the physician himself make the call rather than his patient, who, as a stranger, stands less of a chance of getting medical aid.

Problem Is Local

It has been suggested that a registry be maintained in the centers of the community listing the names of all physicians who have signified willingness to make night calls and that these men should be called in rotation. If this is not feasible, the local society must take the initiative and designate a group of physicians to be responsible for night calls during a specified period.

The prerogative and the duty of finding answers to the community medical needs are, of course, that of the county medical society, since plans will undoubtedly be modified by local conditions and needs. It is agreed that the clamoring of socialistically minded and anti-medical groups must be answered and that the county

*Morris Kramer, M.D., Frederick Ward, Jr., M.D., and Frederick Clarke, M.D., prepared a report of the Easton Hospital plan for the *Public Relations Reporter* of the Pennsylvania Medical Society, July 20, 1948.

medical society is the logical place to begin. It is suggested also that the public be made aware that emergency and night service is available to them, whether it is through an individual working arrangement between patient and doctor, by a registry system or by a roster maintained by the county medical society which has designated a group of members to make night calls.

A notable example of efficient management of the night call problem is the plan being followed in Cleveland. Cleveland physicians have taken the position that "response to emergency calls for help from its citizens is the responsibility of the entire community in its official and unofficial capacities."* Just as police and fire departments handle emergencies and city hospitals maintain ambulance service, the doctors in Cleveland have over a period of ten years maintained a system for caring for emergent needs of their patients and have recorded some of their findings.

Many emergency calls, they have found, aren't really serious; but, on the other hand, they maintain, in most cases, only a physician can determine ultimately whether an emergency exists, hence the need to respond promptly to requests for assistance.

With a well-organized round-the-clock switchboard service, such as would be difficult to maintain without proper facilities, Cleveland physicians have been operating a service which has been a source of help to the public in various ways—by answering individual calls for medical care and by providing also assistance to police and firemen who frequently call the exchange for accidents and sudden illnesses when it is not possible to transport victims via ambulance to a hospital.

Average 8.7 Minutes Per Call

The Academy has found that in a group of 300 emergency calls studied, the average length of time elapsing between the call for service and contact with a doctor able and willing to provide service is only 8.7 minutes. Of the 300 calls, there were fourteen that took an unusually long time due to extenuating circumstances. When these were not counted, the average time to locate physicians drops to 6.8 minutes. At a time when anxious relatives are inclined to translate minutes into hours, this average makes for a minimum of inconvenience and friction.

Cleveland's experience is that it is most difficult to reach physicians between 6 and 7 p.m., when most of them are on the way home. During that hour it has taken the switchboard up to twenty minutes to locate a doctor.

The Cleveland study of emergency cases reveals cases where doctors are needlessly called and has put the service on its guard against exposing doctors to such inconvenience. For example, cases occur where someone has summoned a doctor through the telephone exchange, and, upon arriving, the doctor discovers that the police and several helpful neighbors have also summoned other doctors. There are also cases of drug addicts or chronic drunkards who summon physicians when they really aren't needed. The service seeks to eliminate for the physicians such wasted trips.

Thus it is felt by the Cleveland Academy that although it is not legally bound to maintain its call service and that maintaining it entails a certain amount of sacrifice on the part of the members, the grateful response on the part of the public and the satisfaction that a real and efficient public service is being carried out is rewarding enough to argue for the continuance of the system.

*Bulletin of the Academy of Medicine of Cleveland, April, 1948, Page 7.

MEDICINE FACES CRISIS, DOCTOR HAWLEY DECLARES

Medicine is facing a crisis—either it must act or perish—according to Dr. Paul R. Hawley, former chief of the medical division of the Veterans Administration, who now heads the Blue Shield-Blue Cross national commission. Dr. Hawley delivered a scorching warning to the medical profession at the Conference of Presidents and Officers of State Medical Societies at the AMA Chicago meeting last June when he painted a very discouraging picture of medicine surrounded by forces seeking to overthrow it. The only solution, Dr. Hawley maintains, is the extension of prepayment medical and hospital service—at once.

Dr. Hawley pointed out that medical care is no longer the exclusive prerogative of doctors, that consumers have a great stake in it, as borne out by the discussions at the recent National Health Assembly. Such groups as labor, co-op-

eratives, veterans, colored people and the Physicians' Forum are supporting the contention that compulsory health insurance is the only way to meet the standards of health care set up by the National Health Assembly, that voluntary plans "don't go far enough."

The powerful labor unions, medicine is well aware, have for some time been developing health and welfare programs for workers. Medicine hasn't been consulted in the setting up of a single one! The co-ops are busy with proposals to extend their influence and gain certain controls. Dr. Hawley names men in top positions in health plans throughout the United States and Canada who frankly favor government taking over medicine. Speaking of the co-operatives, Dr. Hawley declares:

"I cannot stress too strongly the fact that this movement has already reached the point where the medical profession has the choice only of making a reasonable effort to meet the requirements of these large groups of consumers of medical care, or of watching the private practice of medicine in this country being rapidly strangled either by co-operative or government medicine."

Need a Comprehensive Plan

What does Dr. Hawley suggest? Well, first of all he wants a comprehensive voluntary insurance plan to meet the public demand. The plan, he says, regardless of cost, will have to offer more than one type of contract, according to what the people want to buy—a contract within the reach of low-income groups that will bear all or part of its costs, and in addition a contract for those large union groups who demand more comprehensive service and are both willing and able to pay for it.

Dr. Hawley also suggested that there be a national service agency, controlled by all participating Blue Shield Plans. Dr. Hawley states positively that he believes no individual, local efforts are going to turn the trick without some national co-ordination. He gives the medical profession exactly three years until heavy financial commitments of the government such as the Marshall Plan and the re-armament program will have eased a little and politicians will be able to work in a health tax. Arguments using logic won't help, Dr. Hawley says. The issue will be decided, not by *wisdom,* but by *emotion*—try as medicine may to educate the public on the issues at stake. Only an accomplished fact—a broad, comprehensive program providing the public with the coverage it wants—will save medicine, Dr. Hawley concludes.

ENROLLMENT TOPS 5,000 IN GENERAL PRACTICE GROUP

With an enrollment now of well over 5,000 members, the American Academy of General Practice (AAGP) is going into its second year as a national organization. Big plans are now under way for the first Annual Scientific Assembly, to be held in Cincinnati at the Netherlands Plaza Hotel, March 7, 8 and 9, 1949.

At that meeting, officers of the Academy who were elected at the first Congress of Delegates, held just previous to the AMA meeting in June, will assume their posts. They are: Dr. E. C. Texter, Detroit, President; Dr. Stanley Truman, Oakland, Calif., President-Elect; and Dr. U. R. Bryner, Salt Lake City, Treasurer.

The AAGP is now publishing its own regular Journal, *General Practice News,* a four-page bulletin which appears each month. Doing an excellent job in presenting news of interest to men in general medicine is Mr. Mac F. Cahal, who is also Executive Secretary and General Counsel, with offices in Kansas City, Missouri.

Here in Minnesota, where a national movement to improve standards and advance the position of general practitioners began, a Chapter of AAGP has been organized. Last June following a vote to amalgamate the original organization—American College of Physicians and Surgeons—with the newer group, a charter was granted by the AAGP and the Minnesota Chapter, American Academy of General Practice, was launched. It is planned to have regional groups of the organization throughout the state, eight of which are already in existence.

The local chapter is now extending an invitation for general practitioners to join the Academy. Any general practitioner may write for information to Dr. G. P. Wenzel, Secretary of the Minnesota Chapter, 891 Rice Street, St. Paul. It is necessary to become a member of the Minnesota Chapter before one can join the national organization.

Officers of the state group, elected last October, in addition to Dr. Wenzel, are: Dr. C. S. Don-

aldson, Foley, President, and Drs. James Cosgriff, Olivia, C. J. T. Lund, Fergus Falls, and Gordon Samuelson, Mankato, first, second and third Vice-Presidents, respectively.

The purpose of the state organization closely parallels that of the national group and consists mainly in constantly striving to improve the standards of medicine as practiced by the general practitioner. This is to be done by promoting and maintaining high standards of general medicine and surgery, by assisting in providing general practitioners with postgraduate courses and encouraging them to participate in the courses.

PRACTICAL NURSE LICENSURE IN OPERATION ONE YEAR

In operation one year on August 1, 1948, the Minnesota program to examine and license practical nurses promises to aid greatly in filling the need for qualified persons to provide bedside nursing care.

During the year the original Board of Nursing Examiners consisting of seven members has carried out the terms of the Practical Nurse Licensure law, with the assistance of three additional members, one a physician, one a hospital administrator and one a licensed practical nurse.

The Board reports that out of a total number of 461 candidates taking the first examination given on February 21, 424 were passed and were granted L.P.N. degrees.

In the board's major undertaking the past year, it reports that in developing and planning for maintenance of standards for schools of practical nursing, it aimed to prepare a guide to those institutions and organizations planning to conduct accredited schools of practical nursing and for the use of the board as the accrediting body in determining the eligibility of schools for accreditation, the guide to include the purposes and objectives of a school of practical nursing.

Miss Leila Halverson, who has for many years served the Nursing board as its secretary-treasurer and who has most efficiently administered the work of the board, has resigned, effective September, 1948. Miss Helen G. Schwarz becomes the board's executive secretary and will be assisted by Miss Leonora Collatz. Both of these women are extremely well qualified and will continue to carry on the important work of maintaining the standards of nursing in this state.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, Secretary

Minneapolis Painter and Decorator Pleads Guilty to Abortion

Re State of Minnesota vs. Gerald E. Humphries

On September 21, 1948, Gerald E. Humphries, forty-one years of age, 2015 22nd Avenue South, Minneapolis, was sentenced by the Hon. E. A. Montgomery, Judge of the District Court of Hennepin County, to a term of not to exceed two years at hard labor in the State Prison at Stillwater, following Humphries' plea of guilty on September 4, 1948, to an information charging him with the crime of abortion. The Court stayed the sentence and placed the defendant on probation for two years.

Humphries, who is married and the father of four children, was arrested on September 2, 1948, following a report to the Minnesota State Board of Medical Examiners from a Minneapolis hospital, that a twenty-three-year-old Minneapolis woman had been received at the hospital suffering from the after effects of a criminal abortion. The patient stated that she had been aborted on August 19, 1948, by a man she knew only as "Doc." Subsequent investigation by a representative of the Minnesota State Board of Medical Examiners and Minneapolis police officers disclosed that the abortion had been performed by the defendant, Gerald E. Humphries. Humphries was promptly arrested and admitted that he had performed the operation and had received $125 for his services. The defendant also admitted that he had performed a total of seven abortions during the past four years.

The defendant admitted that he had no license to practice any form of healing in the State of Minnesota. He gave his occupation as that of a painter and decorator. He claimed, however, he had been a premedical student for a period of two years.

Minneapolis Pair Plead Guilty Following Arrest for Abortion

Re State of Minnesota vs. Lucille P. Olson and Charles R. Conry.

On September 14, 1948, Charles R. Conry, thirty-two years of age, 3608 Orchard Avenue, Robbinsdale, Minnesota, was sentenced by the Hon. Paul S. Carroll, Judge of the District Court, of Hennepin County, to a term not to exceed four years in the State Prison at Stillwater, following Conry's plea of guilty on July 17, 1948, to an information charging him with the crime of abortion. The Court placed Conry on probation for five years on condition that he remain in the State of Minnesota, be gainfully employed and support his family.

A complaint was issued for Conry and the defendant, Lucille P. Olson, charging each with the crime of abortion. The alleged abortion was performed on a twenty-six-year-old divorced Minneapolis woman who claimed that Conry was responsible for her pregnancy. The defendants were arraigned in the Municipal Court in Minneapolis on June 9, where each waived a preliminary hearing and were held to the District Court for trial. Upon being arraigned in the District Court on the same date, both defendants entered pleas of not guilty,

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MINNESOTA STATE MEDICAL ASSOCIATION

House of Delegates

Summary of Proceedings*

Minneapolis Session—June 6-7, 1948

First Meeting, Sunday, June 6, 1948

Gold Room, Hotel Radisson
Minneapolis, Minnesota

The Ninety-fifth Annual Session of the House of Delegates of the Minnesota State Medical Association convened in the Gold Room, Hotel Radisson, Minneapolis, Minnesota, at 2 p.m., Dr. C. G. Sheppard, Hutchinson, Speaker, presiding.

Dr. Sheppard called the meeting to order and asked for the report of the Credentials Committee. Dr. C. S. Donaldson, Foley, reported that a quorum was present. After approval of the minutes of the 1947 session of the House, Dr. Coventry introduced two distinguished guests to the assembly, Dr. L. W. Larson, Bismarck, Secretary of the North Dakota State Medical Association, and Mr. C. H. Crownhart, Madison, Secretary of the State Medical Society of Wisconsin. Both guests addressed the House briefly and brought greetings from their respective organizations. Dr. Sheppard then called on Dr. A. W. Adson of Rochester, who presented a special citation to Dr. Ludwig L. Sogge of Windom.

DR. ADSON: Too often in the course of our normal activities in state societies we give responsibilities to men, expect them to continue and achieve everything that we hold desirable, feeling free to criticize occasionally if they do not come up to our expectations. But when one of our faithful becomes ill, we rush him flowers; and if a demise occurs, we stand around and talk about what a wonderful man he was.

I am very happy to say that the Council through the virtue of its authority from the House of Delegates has seen fit to render a citation to a man who has done noble service, who has arrived at an age when he should be assisted, where we can still use his counsel, but when a younger man should bear the burden.

This citation has been prepared and designed to express our appreciation to Dr. L. L. Sogge, who has for so many years contributed in so many ways to our Association. I would like to read it now.

Be it known by virtue of the authority vested in the Council of the Minnesota State Medical Association by its House of Delegates that this citation is hereby awarded to you, Dr. Ludwig L. Sogge, in recognition of your service to your colleagues and to the people of this state in supplying advice and leadership in maintaining the high standards of medicine. It is known that you, at personal sacrifice, have given much of your time during the past twenty-three years in directing the activities of the Committee on Public Policy. The years of service entitle you to some relief of that responsibility and to the honorable position of counselor to the Committee on Public Policy. Doctor Sogge, we all commend you for this extraordinary service that you have given, which has been exemplified by your high ideals, your understanding of human nature, your honest, frugality, loyalty and patience.

The citation is signed by F. J. Elias, M.D., Chairman of the Council; A. E. Cardle, M.D., President; and B. B. Souster, M.D., secretary.

I hereby take pleasure in presenting this citation to you, Dr. Sogge. *(Applause.)*

At the request of Dr. Sheppard, the House arose and applauded Dr. Sogge.

Dr. Sheppard then asked Dr. F. J. Elias, Duluth, for the report of the Chairman of the Council.

Report of the Council

DR. ELIAS: The first meeting of the Council in connection with the Ninety-fifth Annual Meeting of the Minnesota State Medical Association was held at 2 p.m. on Saturday, June 5, 1948, for the transaction of routine business. Minutes of the previous meetings were approved and financial reports were submitted and accepted.

An opinion from Mr. G. S. Schuster, investment counselor for the Association, was read by the Finance Committee Chairman, which stated that an analysis of the audit of the Minnesota State Medical Association investment portfolio revealed its present position to be conservative.

The President of the Minnesota Heart Association appeared before the Council and presented a proposal to place plastic hearts in physicians' offices during the month of February as a method of collecting funds to promote the Association's objectives: dissemination of knowledge to the profession and laity concerning heart disease; stimulation of research in cardiovascular disease and development of postgraduate medical education courses. The proposal was referred to the House of Delegates.

The Chairman of the Insurance Liaison Committee introduced a proposed brochure which the Committee had developed in conferences with a representative committee from commercial insurance carriers operating in Minnesota. The Chairman of the Committee was instructed to revise the brochure, confining it to a statement of minimum standards which medical insurance contracts sold by insurance companies must meet to receive the approval of the Committee and that all reference to the Minnesota State Medical Association be deleted except insofar as is necessary to refer to the Insurance Liaison Committee as a Committee of the Association which is co-operating in a program to raise the standards of benefits of prepayment medical insurance contracts sold in Minnesota.

Applications for Affiliate Membership were approved for Dr. Margaret I. Smith, Robbinsdale; Dr. Peter Boysen, formerly of Pelican Rapids; and Dr. P. H. Benion, Saint Paul. Life Memberships were approved for Dr. Clarence W. Taylor of Duluth and Dr. O. H. Hegge of Austin.

The Council adjourned for dinner at 5:45 p.m. and re-convened in the Spanish Room at 7 p.m. for the completion of routine business.

*In accordance with action by the Council of the Minnesota State Medical Association in 1944, publication of the proceedings of the House of Delegates is limited to summary.

A resolution from the Chairman of a special committee to study the question of rebates was introduced.

A committee was appointed to study the question of the State Association's interpretation of the term "clinic" in connection with group practice and to confer with the American Medical Association and the Council on Economic Research, both of which are working on definitions of the term, and report back to the Council.

The appointment of Dr. Charles E. Proshek of Minneapolis to succeed Dr. T. H. Sweetser, who has resigned as the Chairman of the Committee on State Health Relations, was approved.

The appointment of Dr. Theodore Catlin of Buffalo and Dr. Frederick L. Schade of Worthington on the Advisory Board to the Minnesota Department of Health under the hospital licensing law, was approved by the Council. Dr. Thomas E. Broadie of St. Paul was approved for reappointment on the Advisory Board to the Health Department under the hospital superintendent registration law.

A report was introduced from the Sub-Committee appointed by the Committee on Tuberculosis to draft a statement concerning the use of BCG as set forth in the minutes of the meeting of the Tuberculosis Committee, held February 6, 1948, for referral to the proper Reference Committee, whereupon the Council recommended its referral to the Reference Committee on Officers and Council Reports. The meeting of the Council was adjourned at 9:30 p.m.

The second meeting of the Council in connection with the Ninety-fifth Annual Session was held at 9 a.m., Sunday, June 6.

The Chairman of the Committee on Cancer appeared before the Council and outlined a project proposed by the Committee in conjunction with the Cancer Control Division of the Minnesota Department of Health to provide a Cancer Education Service, co-sponsored by the Cancer Committee, Minnesota State Medical Association; Medical School, University of Minnesota, the Health Department and the Minnesota Division of the American Cancer Society.

The project is described as follows:

A PROJECT TO BE KNOWN AS THE CANCER EDUCATIONAL SERVICE OF THE CANCER COMMITTEE OF THE MINNESOTA STATE MEDICAL ASSOCIATION

Purpose—To establish a Cancer Educational Service which would be readily available to Minnesota county medical societies, hospital staffs and individual physicians.

Consultants—A group of recognized specialists who are qualified to give authoritative opinion on some phase of cancer diagnosis or treatment, selected by the Cancer Committee from volunteers. this group may be added to at any time to include physicians for special problems.

Plans—The Cancer Educational Service will offer three types of service without expense to local physician, hospital staff or county society.

(a) A team of from three to five members of the Cancer Educational Service will be offered to any component society of the Minnesota State Medical Association for a one-day cancer institute.

(b) One or possibly two members of the Cancer Educational Service will be available to meet with any hospital staff in the state, no matter how small, for an afternoon or evening cancer discussion.

(c) A free cancer correspondence service for physicians wishing information regarding any problem in a specific cancer case. Inquiries will be referred to a member of the Cancer Educational Service who seems best qualified to answer. Names of physicians making the inquiry will not be divulged and the opinion of the cancer consultant will be forwarded to the inquiring physician. Inquiries of special interest and the consultant's opinion will be published in MINNESOTA MEDICINE from time to time, without using names of physician or consultant.

Headquarters—The office of the Minnesota State Medical Association shall be the headquarters of the Cancer Educational Service of the Cancer Committee.

Operation—The Cancer Educational Service will be carried on under the direction of the Cancer Committee of the State Medical Association. All communications relative to this service shall be mailed out on special stationery of the Minnesota State Medical Association Cancer Committee, carrying the address of the State Medical Association headquarters in St. Paul. The Cancer Control Division of the Minnesota Department of Health will finance a secretarial service to aid in the operation of the Educational Service. This secretarial service will take care of scheduling the consultants for county medical society and hospital staff meetings. Also this service will submit correspondence inquiries to the selected consultant and transmit the reply to the inquiring physician. The Cancer Control Division of the Minnesota Department of Health will aid the Cancer Committee in every way in promoting and carrying out these institutes and staff meeting conferences.

Financing—This service will be principally financed through funds of the Cancer Control Division of the Minnesota Department of Health, but other organizations, such as the Minnesota Division of the American Cancer Society may also contribute to this service. Consultants will be paid an agreed stipend for the services rendered.

* * *

The Council approved this project subject to the declared principles that clinical material shall be used solely for educational purposes and the recommendation that the use of cancer teams be arranged through officials of component medical societies only.

A letter of resignation addressed to the Council by Dr. A. W. Adson as a member of the American Medical Association House of Delegates from Minnesota was read and accepted.

The Council approved a motion to place in nomination the name of Dr. J. A. Bargen, Rochester, as a nominee for membership in the AMA House of Delegates from Minnesota at the expiration of Dr. Adson's present term.

The Council recommended the nomination of Dr. W. A. Coventry to succeed himself as a member of the AMA House of Delegates from Minnesota.

The nominations of Dr. W. L. Burnap, Fergus Falls, and Dr. J. C. Hultkrans, Minneapolis, to succeed themselves as alternate members of the AMA House of Delegates from Minnesota were approved by the Council.

The Council voted to endorse unanimously the candidacy of Dr. A. W. Adson of Rochester for the office of President-Elect of the American Medical Association. *(Applause.)*

* * *

With the recommendation that the question of the resolution on rebates presented in the Council report be laid on the table for further action, the House of Delegates approved the report of the Chairman of the Council.

Speaker Sheppard then called for the report of the Finance Committee from Dr. R. L. J. Kennedy, Rochester, Chairman.

Report of the Finance Committee

DR. KENNEDY: The wisdom and good judgment of the preceding Finance Committee continues to be confirmed by the present financial condition of the Minnesota State Medical Association. Although it appears to be satisfactory, there is evidence that the Association is operating on a narrower financial margin in respect to income and expenses than it has during recent years. The increase of income from dues from an increased membership has been more than offset by mounting costs of supplies and of help, by additional expenses due to increased activities of various committees and by decreased income from the annual meetings, due to increased costs of installation of exhibits.

The investment portfolio of the Association has undergone little change. The conservative policy that has been followed in the past continues to be reliable. The advice of experts in the field of investment is to maintain the portfolio as it has existed for the past two years.

Financial conditions during the past year have again emphasized the importance of maintaining a strong reserve position. In the opinion of the members of the

Finance Committee, the investment fund of the Association is not large and with world affairs as unsettled as they are at present, weakening of the reserve position should be avoided.

The State Medical Association continued the financing of the Veterans Medical Service Division during the year 1947. Anticipating the financial relationship of the State Medical Association to the Veterans Medical Service Division for the year 1948, it may be stated that the repayment of funds advanced to the Veterans Medical Service Division has already begun.

During the past year the Association implemented a group insurance plan which was developed by the Northwestern National Life Insurance Company for the active members of the State Medical Association. The State Medical Association will be reimbursed for expenses that were incurred at the end of the year 1948. For various reasons all of the component societies did not qualify for participation by their members in this insurance program. In the opinion of the members of the Finance Committee, the insurance program is highly desirable, and it is hoped that by the time of the next annual insurance date the rest of the component societies will have qualified for participation and that the insurance company will make it possible for the members of such component societies to enjoy the benefits of this program.

The Finance Committee wishes to acknowledge indebtedness to the Executive Secretary of the Association and to his staff for the aid received throughout the year and the help in preparation of reports on the financial status of the State Medical Association.

The members of the Finance Committee in addition to the Chairman are: Frank J. Elias, M.D., Ernest M. Hammes, M.D., A. E. Cardle, M.D., *ex officio.*

* * *

The House of Delegates accepted the report of the Finance Committee, as presented.

The Delegates next heard a comprehensive report of the findings of a special committee, appointed at the 1947 meeting of the House, to investigate insurance contracts, disability features and group life insurance. Presenting the report was Dr. Thurston W. Weum, Minneapolis, Chairman. The report was accepted by the House.

Reports of Reference Committees

The next order of business was the reports of the various reference committees. The Speaker called first upon Dr. H. M. Carryer, Rochester, Chairman of the Reference Committee on Medical Education Reports.

Medical Education Reports

Dr. Carryer: Your Reference Committee on Medical Education Reports met at 10 a.m. June 6, 1948. The following Medical Education Reports were considered:

Committee on Cancer—A. H. Wells, M.D., Duluth, Chairman

Committee on First Aid and Red Cross—J. S. Lundy, M.D., Rochester, Chairman.

Heart Committee—F. J. Hirschboeck, M.D., Duluth, Chairman

Committee on Hospitals and Medical Education—H. S. Diehl, M.D., Minneapolis, Chairman

Committee on Public Health Nursing—Mario McC. Fischer, M.D., Duluth, Chairman

Committee on Syphilis and Social Diseases—Paul A. O'Leary, M.D., Rochester, Chairman

Committee on Tuberculosis—J. A. Myers, M.D., Minneapolis, Chairman

Committee on Vaccination and Immunization—Robert N. Barr, St. Paul, Chairman

Certain items concerning these reports were considered worthy of comment. The Reference Committee on Medical Education Reports was pleased to note the report of the Committee on Hospitals and Medical Education which was submitted by Dr. Diehl. It was especially significant in that those primarily concerned with the training of medical students have emphasized an indoctrination for the general practice of medicine. A policy of providing "general practice internships" will better equip a medical student for the general practice of medicine, and will also provide a more adequate foundation for those wishing training in the various medical specialties. It was felt that the quality of medicine, as it is practiced in the state of Minnesota can only be enhanced by the trend now evident in medical teaching in this state.

The Committee on Medical Education Reports is impressed by the splendid record of achievement of these several committees, the reports of which were reviewed at this meeting. I move the adoption of these reports.

* * *

After some discussion, the House voted to adopt the report of the Reference Committee on Medical Education Reports. Dr. Sheppard called next for the report of the Reference Committee on Miscellaneous Scientific Reports, Dr. J. F. Borg, St. Paul, Chairman.

Miscellaneous Scientific Report

Dr. Borg: Your Committee has carefully considered the following reports:

Committee on Anesthesiology—R. C. Adams, M.D., Rochester, Chairman

Committee on Child Health—G. B. Logan, M.D., Rochester, Chairman

Committee on Diabetes, J. R. Meade, M.D., St. Paul, Chairman

Committee on Fractures—E. T. Evans, M.D., Minneapolis, Chairman

Committee on General Practice—R. H. Creighton, M.D., Minneapolis, Chairman

Historical Committee—M. C. Piper, M.D., Rochester, Chairman

Committee on Industrial Health—L. S. Arling, M.D., Minneapolis, Chairman

Committee on Maternal Health—J. J. Swendson, M.D., St. Paul, Chairman

Committee on Medical Testimony—E. M. Hammes, M.D., St. Paul, Chairman

Committee on Military Affairs—J. H. Tillisch, M.D., Rochester, Chairman

Committee on Nervous and Mental Diseases—W. P. Gardner, M.D., St. Paul, Chairman

Committee on Ophthalmology—T. R. Fritsche, M.D., New Ulm, Chairman

Committee on Public Health Education—S. H. Baxter, M.D., Minneapolis, Chairman

Radio Committee—R. M. Burns, M.D., St. Paul, Chairman

Speakers' Bureau—F. J. Heck, M.D., Rochester, Chairman

Your Committee approved the above reports with the following qualifications:

Your Committee approves the report of the Committee on Anesthesiology, but recommends that it communicate with the Committee on Anesthesiology and state that it is suggested that it be the recommendation of the House of Delegates that it include in its program and its aims the encouragement of the training of nurses for anesthesia administration in such locations as it is necessary to use them. This Committee suggests that the Committee on Anesthesiology also encourage the inclusion of proper training in anesthesia of all students in the curriculum of the Medical School of the University of Minnesota.

Your Committee accepts the report of the Historical

Committee and recommends that the Council take favorable action on the suggestion that the material prepared to date be published. It is also recommended that Dr. Piper be given opportunity to express before the House of Delegates in connection with the submission of this report developments concerning this project.

Your Committee recommends the acceptance of the recommendations of the Committee on General Practice exclusive of paragraphs two and five, which are debatable, and it is suggested that these paragraphs be brought before the House of Delegates for discussion. It is also suggested that these recommendations be transmitted to the Dean of the Medical School as representative of the consensus of the Committee on General Practice.

Your Committee respectfully moves the approval of these reports.

Dr. Piper was then called upon to elaborate on the discussion of the proposal to publish the material on medical history in Minnesota. Following his discussion, it was moved that the House of Delegates authorize the Council to proceed to work out arrangements for the publication of the first volume of the History of Medicine in Minnesota, that the Historical Committee should have the assistance of the Editing and Publishing Committee in editing the material and that the Executive Secretary be empowered to inquire of the State Medical Association whether they will subscribe to the pre-publication subscriptions to the volume. The motion was carried.

Dr. Jan H. Tillisch, Chairman of the Committee on Military Affairs, then outlined for the delegates the work of the AMA Council on National Emergency Medical Service, which is laying groundwork for a program to be set in motion in the event of another national emergency. He described nationwide activities in setting up state disaster committees and explained how the government is preparing for defense with the setting up of the National Resources Board which will control material and personnel for the military and for civilians if and when there is another war.

Dr. Tillisch told the delegates that in the event of war, or in connection with national defense plans, reserve officers of both the navy and army medical corps may be called in at any time at the discretion of the President and that inactive members of the naval reserve probably will not be called in without official permission of Congress.

Dr. Ralph H. Creighton, Chairman of the Committee on General Practice appeared before the House to explain and comment on the two paragraphs in question from the report submitted by his committee. Following the discussion over the two points: paragraph 2 suggesting that candidates for specialty training take preliminary training in general practice and paragraph 5 making it essential that hospitals establish rotating internships with integrated teaching programs before being granted AMA approval, the House voted to accept the Report of the Reference Committee on Miscellaneous Scientific Reports, with paragraphs 2 and 5 deleted and paragraph 5 to be referred to the Committee on Medical Education and Hospitals.

Officers' and Councilors' Reports

Dr. C. W. Moberg, Detroit Lakes, Chairman of the Reference Committee on Officers' and Councilors' Reports, was called upon next.

Dr. Moberg: Your Committee has considered the reports of the Officers and Councilors very carefully and has found them to be complete. . . . I would now like to take up each report considered and make a few comments.

As regards the report of the Secretary and Executive Secretary, your Committee was impressed with the volume of work that now flows through the state office. The report was excellent and complete. We recommend the acceptance of the report.

Next to be considered was the report of our Treasurer, Dr. W. H. Condit. We recommend that this report also be accepted. The report of the Chairman of the Council was very elaborate and complete. It contained several important matters meriting special consideration by the House.

The first matter we should like to call to the special attention of the Delegates is the recommendation that the matter of Rh typing be reconsidered. . . .

The next matter warranting . . . the special attention of the House is a recommendation made jointly by the Committee on Military Affairs and the Committee on First Aid and Red Cross, which was presented to the Council and is reported by the Council Chairman and referred to the House for action. These two Committees wish to be combined and become known as the Committee on Emergency Medical Service. Your Reference Committee requests that the House of Delegates consider this matter.

On specific referral to your Reference Committee by the Council at its meeting last night, the matter of BCG and its use in Minnesota was discussed in connection with the Chairman of the Council's report. (Dr. Moberg read a paragraph from the report of the Committee on Tuberculosis, which was being presented by the Committee as a substitute for the resolution passed by the 1947 House in regard to BCG.)

An important matter discussed in the Council report is that of publication of the minutes of the Council—in edited form—in Minnesota Medicine. We urge that the House consider this proposal pro and con. . . .

A final consideration in the Council Chairman's report, which the Reference Committee would like to direct to your attention, is discussed in the last three paragraphs. It is evident from this report that the activities of organized medicine in this state are rapidly expanding and that there is a great need for such expansion in view of the importance of maintaining an active public health and public service program by the state association. These increased activities place a burden upon the state office staff which is rapidly approaching a serious problem. It calls for some action from the House of Delegates as a whole to assume more of the responsibility. As suggested in the Council report, it might be wise to procure a competent assistant secretary to assume a fair share of the public relations work and to relieve the burden of some of the multiple details falling upon the state office at the present time.

In view of these considerations, your Committee respectfully recommends that sufficient assistance shall be provided for our state office to carry out its many activities and to secure additional personnel as needed to conduct these activities efficiently.

We further recommend that our annual dues be increased if needed to provide for the additional personnel. The amount of increase in dues should be a joint responsibility of the Finance Committee and the Council.

With these recommendations we have accepted the report of the Chairman of the Council and we move its adoption by the House.

Your Reference Committee has considered carefully each of the reports of the Councilors. We are of the opinion that many of the problems cited are local in nature and should be handled by the individual districts. But before recommending action on these reports, we should like to call attention to a couple of details. The first is that of the importance of ALL LOCAL SOCIETIES notifying the District Councilor of ALL MEETINGS so that he may have an opportunity to be present. Thus, there can be maintained the closest possible contact between the Council and the component county medical societies within the Association.

The Councilor of the Fifth District reports that since there are only five county members in the Dakota County Medical Society and that most of the members in that attend meetings with Ramsey or Hennepin or Goodhue Counties, and some have joined nearby societies, that the Dakota County Medical Society be permitted to dissolve should it desire to do so in order that its members may officially join the medical society which is nearest and most convenient for them.

Your Committee now wishes to recommend the adoption of the Councilor reports, and I so move. This includes the following reports:

First District—R. L. J. Kennedy, M.D., Rochester
Second District—L. L. Sogge, M.D., Windom
Third District—L. G. Smith, M.D., Montevideo
Fourth District—A. E. Sohmer, M.D., Mankato
Fifth District—E. M. Hammes, M.D., St. Paul
Sixth District—O. J. Campbell, M.D., Minneapolis
Seventh District—W. W. Will, M.D., Bertha
Eighth District—W. L. Burnap, M.D., Fergus Falls
Ninth District—F. J. Elias, M.D., Duluth

Dr. Sheppard, following a motion to accept the Report of the Reference Committee on Officers' and Councilors' Reports, opened the report for discussion. The first to address the House was Dr. Kano Ikeda, St. Paul, speaking for the Minnesota Society of Clinical Pathologists and other pathologists of the state. He asked that the resolution passed by the 1947 House of Delegates that the State Department of Health be required to do Rh typing be rescinded. After a lengthy discussion, the House voted to rescind its previous action.

The next item to be considered was Dr. H. C. Hinshaw's report as to accepting his statement on BCG in lieu of a resolution passed by the House in 1947. Following a brief discussion, the statement prepared by Dr. Hinshaw was referred back to the Reference Committee on Medical Education Reports for further consideration. The Committee was requested to report back to the House following its discussion of the statement on BCG.

It was next ordered by the House that the matter of increase of dues should be further studied.

The next matter to be considered was the merging of the Committees on Military Affairs and First Aid and Red Cross into one committee to be known as the Committee on Emergency Medical Service. The motion to combine these two committees was lost.

The meeting of the House was recessed at 5:40 p.m.

Second Meeting, Sunday, June 6, 1948

Gold Room, Hotel Radisson
Minneapolis, Minnesota

The House of Delegates reconvened at 8 p.m. The first person to address the House was Dr. William F. Braasch, Rochester, who introduced to the Delegates Mr. Harold E. Stassen, former Governor of Minnesota, and candidate for the Presidency of the United States.

Mr. Stassen addressed the House in regard to his candidacy, stating his position with regard to health and government in America. He thanked the medical profession for its support of his candidacy, reviewed some of the work which he had carried on with the physicians of the state during the period while he was governor and pledged that in the event he should be elected president, he would never permit a law to become an act with his signature which affects medicine or health that is not approved by the American medical profession.

Following Mr. Stassen's address, the Credentials Committee reported that a quorum was present.

The next item of business was a report from Mr. Jarle Leirfallom, director of the Division of Social Welfare.

Mr. Leirfallom expressed appreciation of the Division to the doctors of Minnesota for the services to the indigent during the year. He told of meeting with the Association Medical Service Committee for the purpose of discussing the fee schedule for care of indigents. He said that he was impressed with the thoughtful and co-operative attitude of the Committee and he reported that the increase in fees was acceptable to the Division which is cognizant of the need for such an increase.

He urged the activation of all medical advisory committees throughout the state since they are of immense value to the Division in its work. He discussed briefly the program for service to crippled children and reported that it is felt generally that the program is a successful one.

Mr. Leirfallom expressed regret over the loss of the services of Dr. Edwin J. Simons, who resigned as chief of the medical services unit during the year. He said that the Division was very fortunate in securing Dr. F. F. Callahan for that post and that Dr. Callahan was doing an excellent job.

Dr. A. W. Adson, Rochester, Chairman of the Medical Service Committee which was responsible for negotiating with the Division of Social Welfare in the matter of fees for care of indigents, spoke briefly regarding the proposed upward revision of fees. He also emphasized the need for county medical advisory committees.

Dr. Sheppard then called upon Dr. O. I. Sohlberg, St. Paul, who reported on the activities of Minnesota Medical Service, Incorporated, of which he is President. Dr. Sohlberg said that Minnesota Medical Service was incorporated on January 10, 1947, and that its By-Laws, adopted, February 1, 1947, were approved by the Attorney General on April 27, 1947. The plan, now known as "Blue Shield," Dr. Sohlberg said, began enrolling subscribers on November 15, 1947, although official inauguration ceremonies were not held until April 12, 1948. At the ceremonies, held at Northrop Memorial Auditorium on the campus of the University of Minnesota, Dr. Paul R. Hawley, formerly of the Veterans Administration and now head of the national Blue Shield-Blue Cross Commission, was the principal speaker. Attending were some 800 doctors, civic leaders and government officials, Dr. Sohlberg reported.

As of May 1, Dr. Sohlberg said, a total of 2,101 doctors were enrolled as participants and over 21,000 persons were covered. The financial condition of Blue Shield, he said, is healthy; and he expressed the belief that it would continue to prosper.

A brief question-and-answer period followed, at which Dr. Sohlberg and Mr. Arthur M. Calvin, director of Blue Cross and acting director of Minnesota Medical Service, Incorporated, answered questions from the floor of the House.

Next to be heard was the report of the Minnesota State Board of Examiners in the Basic Sciences, given by Dr. Raymond N. Bieter, Minneapolis, Secretary-Treasurer. Following Dr. Bieter's report, Dr. Julian F. DuBois, Secretary, Minnesota State Board of Medical Examiners, presented a report of the Board's activities.

Dr. J. I. Fitzsimmons, Assistant Medical Director, Veterans Administration Branch Office No. 8, Fort Snelling, addressed the delegates briefly regarding the medical phases of the VA program. He reported that the Veterans Medical Service program, known as the Home-Town Medical Care program, which has been functioning for a year and a half, has proved satisfactory to the Veterans Administration. He thanked the medical profession for its assistance in the past and expressed the hope that it will continue to assist the Veterans Administration in the future.

Major Arthur Tarrow, Professor of Military Science and Tactics, University of Minnesota, spoke to the Delegates in regard to a program which the army has inaugurated to increase the number of physicians to care for an augmented peace-time army.

Next to be presented was the report of the Minnesota Hospital Construction and Planning Program, given by Dr. Helen L. Knudsen, Director.

Dr. Knudsen reported that Minnesota became eligible for federal aid in the construction of a number of hospitals with the approval of the Minnesota Plan on March 5, 1948. The State Board of Health is responsible for planning and construction phases of the program, she said.

According to present plans, Dr. Knudsen said, the completion of the Minnesota hospital building program will bring the majority of the population within an approximate radius of 20 miles of a hospital. Dr. Knudsen also outlined plans regarding mental disease hospitals, tuberculosis hospitals, chronic disease hospitals and public health centers.

The Hospital Survey and Construction Act authorizes an annual grant of $1,655,175 over a five-year period to assist in building needed hospitals and public health centers in Minnesota, according to Dr. Knudsen. Plans are to use the first year's funds mainly for general hospitals, with one institution being built in each of the public health center and chronic disease hospital categories. Federal funds constitute one-third of the total cost of the program, Dr. Knudsen said.

A brief report from Dr. A. J. Chesley, Secretary and Executive Officer of the State Department of Health, followed Dr. Knudsen's talk.

A report from the University of Minnesota Medical School was then presented by Dr. M. M. Weaver, Assistant Dean, after which Dr. George N. Aagaard, recently appointed Director of Postgraduate Medical Education, was presented to the Delegates.

Dr. William F. Braasch, Rochester, a member of the Board of Trustees of the American Medical Association, told the Delegates about some of the work being done by the Board and the problems facing the Board, covering the extension of prepayment medical care plans, participation in the National Health Assembly, and the mid-winter meeting of the AMA House of Delegates to be held in St. Louis.

The discussion of the report of the Reference Committee on Officers' and Councilors' Reports was then resumed by the House. Dr. Sheppard opened the discussion on the matter of publication of edited reports of Council proceedings in Minnesota Medicine.

A motion to mimeograph the edited Council reports and distribute them to the Secretaries of the component medical societies was passed by the Delegates in lieu of publication of these proceedings in Minnesota Medicine.

Dr. Elias presented a report of a meeting of the Council, held following the afternoon meeting of the House of Delegates, at which the question of dues and rebates were discussed. Dr. Elias reported as to regulations in the Constitution regarding the fixing of Association dues, which require that "the annual dues shall be determined by the House of Delegates, but shall not exceed the sum of twenty dollars per capita per annum except on a two-thirds vote of the Delegates present." It was suggested at the Council meeting, Dr. Elias reported, that this portion of the Constitution be amended to read "thirty dollars." However, the Constitution, it was reported, prescribes the manner of amendment so as to require the publication of the proposed amendment and the submission of the proposed amendment to the membership not less than three months prior to the House of Delegates meeting at which action is to be taken.

Lack of a quorum prohibited further action. The House of Delegates recessed at 10:55 p.m. to reconvene the following day at 12:15 p.m.

Third Meeting, Monday, June 7, 1948

Gold Room, Hotel Radisson
Minneapolis, Minnesota

Following a luncheon at 12:15 p.m., the House of Delegates reconvened at 1:30 p.m. with Dr. Sheppard presiding. Dr. Donaldson reported that a quorum was present.

The first item of business was the resumption of the Officers' and Councilors' reports, with a report from Dr. Haddon M. Carryer's Reference Committee on Medical Education Reports to which was referred the question of BCG. Dr. Carryer presented the following resolution on BCG:

Whereas it is a well known clinical fact that tuberculosis is a disease against which the human body frequently cannot develop strong, dependable and permanent immunity and

WHEREAS the use of BCG vaccine is authoritatively reported to provide a relative immunity of varying degree and duration, and

WHEREAS the American Trudeau Society, after extensive consideration, has said "BCG vaccine, prepared under ideal conditions and administered to tuberculin negative persons by approved techniques, can be considered harmless," be it therefore

RESOLVED that the House of Delegates of the Minnesota State Medical Association approve the use of BCG vaccine in the state of Minnesota,

1. PROVIDED that its use be limited to those persons with negative tuberculin skin test reactions who may be exposed to unusual hazards of tuberculous infection greater than the danger experienced by the general population, and
2. PROVIDED that vaccination be carried out under conditions which permit prolonged observation of all vaccinated persons and
3. PROVIDED that the vaccine employed be obtained from the laboratories approved by the United States Public Health Service or the Minnesota State Board of Health, and
4. PROVIDED that all instances of persons vaccinated with BCG shall be reported to the Minnesota State Board of Health, and
5. PROVIDED that recognition be given to the fact that the use of BCG vaccine is not a substitute for accepted methods of tuberculosis prevention and control, and should not lead to a relaxation of such precautions.

The House of Delegates voted to accept this resolution in lieu of the resolution on BCG passed by the 1947 House.

Dr. Carryer reported that his Committee had studied the question of the advisability of placing plastic hearts in physicians offices during the month of February, a matter previously referred by the House to the Committee on Medical Education Reports, and had concluded that the plan could be adopted, provided it was carried out with the approval of the county medical society and the individual physician in whose office the funds are to be solicited. The House voted to approve the plan.

Dr. Elias then presented the matter of dues and reported further action by the Council on the matter. Dr. Elias reported that in view of the necessity of publication and notification three months in advance of any action to be taken with regard to amending the Constitution, the Council wished to recommend that a special assessment of ten dollars be allowed, commencing the first of next year, January, 1949. Dr. Elias stated that this should take care of the program of increased activities until such time as the Constitution could be properly amended.

The House of Delegates then voted to accept the report of Dr. Elias for the Council, and, at the suggestion of the Chairman of the Finance Committee, a second motion was made and passed accepting the special assessment for 1949 dues. That concluded the material covered in the Report by the Reference Committee on Officers' and Councilors' Reports. A motion was passed by the House accepting the Report.

* * *

Dr. Sheppard called upon Dr. F. W. Behmler of Morris for the report of the Reference Committee on Medical Economics Reports.

Medical Economics Reports

DR. BEHMLER: The Reference Committee on Medical Economics Reports met yesterday with all members present. After studying the report of the Editing and Publishing Committee, approval was given, with a special commendation for the valuable work of Mr. J. R. Bruce as Business Manager and Dr. Carl B. Drake as Editor of MINNESOTA MEDICINE. Mr. Speaker, I move the adoption of the report. (The Delegates voted approval.)

The Reference Committee approves the report of the Committee on Interprofessional Relations without further comment. (House approved the report.)

The Reference Committee approves the report of the Medical Advisory Committee and also commends the Committee on the formation of the Joint Grievance Committee. (House approved report.)

After studying the report of the Committee on Medical Economics, we approve the report and wish to commend the Committee on its continued effort to preserve our present system of medical care. (House approved report.)

The Reference Committee approves the report of the Committee on Medical Ethics with no comment. (House approved report.)

The Reference Committee also approves the report of the Committee on University Relations with no comment. (House approved report.)

The Reference Committee thoroughly considered the report of the Committee on Public Policy. The Committee heartily approves the reorganization of the Committee on Public Policy with the increase in membership. It also gives 100 per cent approval of its five point program. . . .

We believe that a Public Relations Counsel should be obtained either on a full-time or extensive part-time basis. An active program on public relations should be carried out by the Minnesota State Medical Association immediately. . . . We wish to emphasize the need and value of the county health unit bill and urgently recommend a study of this question of county units by a committee of the Council, to be presented to our Public Policy Committee.

Following the acceptance by the House of the report of the Committee on Public Policy, the report of the Reference Committee on Medical Economics Reports was complete. The next item of business was the report of the Reference Committee on Miscellaneous Medical Economics Reports, Dr. F. L. Schade, Worthington, Chairman.

The House accepted the five reports considered by the Committee, with the recommendations as follows:

Insurance Liaison Committee—A. W. Adson, M.D., Rochester, Chairman

Committee on Medical Service—Dr. Adson, Chairman, with the suggestion that a study be made of the optical code used by the State Welfare Board.

Committee on Rural Medical Service—Paul C. Leck, M.D., Austin, Chairman

Committee on State Health Relations—T. H. Sweetser, M.D., Minneapolis, Chairman, with the recommendation that a study be made of the coroner situation, particularly in rural areas of the state.

Committee on Veterans Medical Service—R. H. Creighton, M.D., Minneapolis, Chairman, with the recommendation that the attention be again called to the importance of enrolled physicians' filing and promptly returning all VA forms in connection with treatment rendered veterans.

It was subsequently moved by the House that the Committee on Rural Medical Service should study the township system with regard to the care of indigents with the purpose of finding a better method for providing medical care for these unfortunates, perhaps replacing them with a good county welfare board system.

Next was the report of the Resolutions Committee, Dr. R. R. Cranmer, Minneapolis, Chairman.

DR. CRANMER: WHEREAS the weekly broadcast on health conducted under the auspices of the Minnesota State Medical Association passed its twentieth anniversary on the air this year, and

WHEREAS the Minnesota State Medical Association has been very fortunate in securing the services of Dr. Stewart C. Thomson, Associate Professor of Public Health of the University of Minnesota, as speaker on these broadcasts, and

WHEREAS station WCCO has carried this program without cost to the Association during these many years, now be it therefore

RESOLVED that this House of Delegates express its deep appreciation to Dr. Thomson and to station WCCO for their splendid contributions in making these public health education programs possible.

The thanks and appreciation of the House of Delegates is hereby extended:

To the officers and members of the Hennepin County Medical Society, the Hennepin County Medical Auxiliary and its Committee on Local Arrangements for their services and co-operation in making possible this fine Minneapolis meeting;

To the management of the Hotel Radisson and all of the hotels in Minneapolis for courtesies extended to our guests;

To radio stations WCCO, KSTP, WLOL, WDGY and WCTN, and their staffs, for making possible the fine schedule of broadcasts arranged in connection with the meeting; and

To the Minneapolis *Morning Tribune,* the Minneapolis *Star* and the Saint Paul *Dispatch-Pioneer Press* for their excellent reporting of scientific sessions held in connection with this meeting and for their generous contributions of space to advance announcements.

* * *

RESOLVED that the House of Delegates of the Minnesota State Medical Association commend the renewed interest in, and the increased cognizance of the work which must be done in caring for inmates of the state institutions. It wishes particularly to commend the work being done by the Governor's Advisory Committee on Mental Health and to urge the continuance of this project.

It is requested that if this resolution is adopted that a copy of it be forwarded to the Chairman of the Governor's Advisory Committee on Mental Health.

* * *

RESOLVED that the House of Delegates go on record as supporting the Council on Emergency Medical Service of the American Medical Association in its efforts to secure medical representation on the National Resources Planning Board; and be it further

RESOLVED that this action of the House of Delegates be brought to the attention of the Council on Emergency Medical Service of the American Medical Association and other official bodies as may be necessary to implement this resolution.

* * *

BE IT RESOLVED by the House of Delegates of the Minnesota State Medical Association that the medical faculty of the University of Minnesota be cognizant of the predicament of non-metropolitan areas of the state which lack well-qualified practitioners in Eye, Ear, Nose and Throat. This is the result of the rigid division of training for specialization in either Eye *or* in Ear, Nose and Throat. Minnesota is predominantly a rural state—in area and in population—and the need for these services in the rural areas is becoming more acute.

BE IT FURTHER RESOLVED that the Medical Faculty of the University of Minnesota be urged to investigate this undesirable situation and find means in their training curriculum to rectify it.

The House of Delegates approved all of the above resolutions, thus completing the report of the Resolutions Committee.

Dr. Sheppard then called upon Dr. Elias, Chairman of the Council, for a final report from the Council.

DR. ELIAS: In reporting on the activities of the Council since the session of the House of Delegates last night, your Chairman wishes to state that the members of the Council were guests of the officers and members of the Board of Directors of Minnesota Medical Service at a breakfast meeting at 7:30 this morning. This was the first annual business session of that organization.

(I might add that this was a very fine meeting and that the Council was in agreement with all of the work and proposals that the Service has engaged in up to this time.)

The Council withdrew from that meeting to convene at 10 a.m. for completion of discussions on the resolution regarding the question of rebates. I will now restate the resolution as it now stands for the action of the House of Delegates:

The Council hereby declares itself unalterably opposed to all forms of rebates and declares the acceptance of such as an unethical practice and grounds for disciplinary action by the county societies.

It is recommended that any practice which might give rise to public suspicion that a business arrangement exists between a commercial house and a physician be discontinued.

The Council assures the House of Delegates that it is fully aware of the serious damage to our public relations which has occurred due to the publicity given the government action against the members of our Association.

The Council will stay alert and will inform the county societies when it is timely to implement the above suggested action.

* * *

The House voted its approval of the report of the Chairman of the Council.

The next order of business was the reading of the names of members who died during the past year. Dr. M. C. Piper, Rochester, read the names of 55 physicians, after which a moment of silence was observed.

The next order of business was the election of officers. The following were unanimously elected by the Delegates:

President-Elect: E. M. Hammes, M.D., St. Paul

First Vice President: Charles E. Proshek, M.D., Minneapolis

Second Vice President: A. E. Sohmer, M.D., Mankato

Secretary: B. B. Souster, M.D., St. Paul (re-elected)

Treasurer: W. H. Condit, M.D., Minneapolis, (re-elected)

Speaker of the House: C. G. Sheppard, M.D., Hutchinson, (re-elected)

Vice Speaker of the House: H. M. Carryer, M.D., Rochester, (re-elected)

Councilor, Fourth District: H. J. Nilson, M.D., North Mankato

Councilor, Fifth District (to fill the unexpired term of Dr. Hammes): Justus Ohage, M.D., St. Paul

Councilor, Sixth District: O. J. Campbell, M.D., Minneapolis, (re-elected)

Councilor, Eighth District: W. L. Burnap, M.D., Fergus Falls, (re-elected)

Delegates to the American Medical Association: J. A. Bargen, M.D., Rochester, and W. A. Coventry, M.D., Duluth, (re-elected)

Alternates: J. C. Hultkrans, Minneapolis, (re-elected) and W. L. Burnap, Fergus Falls, (re-elected)

The final order of business was the selection of the meeting place for the 1949 Convention. The House of Delegates voted to accept the invitation from the Ramsey County Medical Society to hold the meeting in Saint Paul.

At 3:07 p.m. the Ninety-fifth Annual Meeting of the House of Delegates was adjourned.

SPECIAL FEATURES

At the annual banquet of the Minnesota State Medical Association, held Tuesday evening, June 8, 1948, at Hotel Radisson, Minneapolis, several Minnesota physicians were given special recognition.

Admitted to the Minnesota State Medical Association's *Fifty Club* were: Drs. Frank E. Burch, J. S. Gilfillan and Asa M. Johnson, St. Paul; Gerhard A. Dahl, Mankato; A. S. Fleming, A. E. Hedback, C. J. Lind, J. R. Peterson and N. H. Sheldrup, Minneapolis; W. F. C. Heise, Winona; J. G. Parsons, Crookston; W. B. Torgerson, Oklee; and L. A. Williams, Slayton.

The Southern Minnesota Medical Association Medal for the best scientific exhibit displayed at the meeting was awarded to Dr. Leonard S. Arling of Minneapolis, for his exhibit on "What Is Industrial Medicine?" Dr. Arling's exhibit was cited for its excellence from the standpoint of research, timeliness and scientific accuracy.

Honorable mention was made of the exhibits of Dr. Ralph X. Rossen, Hastings, "Radio-Encephalography," and Drs. Vernon L. Hart, Wesley H. Burnham and Stuart L. Arey, Minneapolis, "Congenital Displacement of the Hip Joint." Judging were Dr. Ernest M. Hammes, Sr., St. Paul; Dr. Harold L. Gainey, Kansas City, Kansas; and Dr. Sanford S. Sisson, Jacksonville, Florida.

Presentation of Distinguished Service Medal and Citation

In recognition of his many years of service to the people and to medicine in Minnesota, Dr. Albert J. Chesley, St. Paul, Secretary and Executive Officer of the Minnesota Department of Health, was awarded the Association's Distinguished Service Medal and Citation. Presentation was made by Dr. F. J. Elias, Duluth, Chairman of the Council. The presentation speech of Dr. Elias was as follows:

DR. ELIAS: Tonight I have the very great honor of paying tribute in behalf of the entire membership of the Minnesota State Medical Association to one of its most loyal members and devoted servants. No one will deny, I am sure, that his untiring efforts in behalf of Minnesota medicine and in behalf of all of the people of Minnesota, in fact, have earned for him the highest tribute we can pay.

A staunch advocate of the preservation of private enterprise in medicine, and elsewhere, he has behind him an enviable record of nearly half a century of outstanding service in the field of public health and social hygiene, not only in Minnesota but far beyond its borders and even abroad. In fact, as we have often said about him, it would be hard to visualize health and medical activities in Minnesota over the years since he took a hand in it, without him there.

A native son of Minnesota, he was educated at our State University and since first receiving his M.D. in 1907, he has in some way been serving medicine and public health in this state. Beginning as an assistant bacteriologist with the State Board of Health as his first full-time job, he has been working for the same agency ever since. For some twenty years he was also professor of public health at the University of Minnesota department of preventive medicine.

He also served in the First World War and even before that in the Spanish-American War and the Philippine Insurrection. In 1918-19 he went to France as public health expert for the American Red Cross. In 1919-20 he served as chief of staff for the Red Cross in Poland. In 1940 he guided and planned for welfare and health protection of guardsmen in Minnesota while they trained here in the Defense Program.

He has a record for being able to plan ahead—to see the job through. Evidence of this is seen throughout all of the social hygiene work developed under his direction. He was recognized only last year with the granting of an honorary life membership to him by the American Social Hygiene Association.

And so, at this time, the Council of the Minnesota State Medical Association wishes to award its 1948 Distinguished Service Medal to Dr. Albert J. Chesley. It is a very great honor and a pleasure to confer upon him at this time this citation and this medal of which he is so richly deserving.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

(Continued from Page 1124)

and the cases were set for trial for September 13, 1948. The defendant Olson, at the time of her arrest, was employed at a Minneapolis hospital. It was the claim of the State that the defendant Conry persuaded the defendant Olson to perform the abortion. No money was paid to defendant Olson for her services. Because of the extenuating circumstances in the case, in so far as the defendant, Lucille P. Olson was concerned, the State permitted her to plead guilty to an information charging her with the crime of practicing healing without a basic science certificate, instead of abortion. This plea was entered on September 22, 1948, before Judge Carroll, who imposed a sentence of one year in the Minneapolis Workhouse and, upon the recommendation of legal counsel for the Minnesota State Board of Medical Examiners, suspended the sentence and placed the defendant on probation for a period of three years.

Minnesota Academy of Medicine

Meeting of April 14, 1948

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 14, 1948. Dinner was served at 7 o'clock, and the meeting was called to order at 8:10 by the president, Dr. T. A. Peppard.

There were fifty members and four guests present.

Upon ballot, the following were elected as candidates for membership in the Academy: Dr. J. R. Aurelius, Saint Paul, and Dr. Clarence Dennis, University Medical School.

The scientific program followed.

TRANSMUTATION OF A MYELOID INTO A LYMPHATIC LEUKEMIA OR AN EARLY STEM-CELL UNDIFFERENTIATED LEUKEMIA

Case Report

J. A. LEPAK, M.D.
Saint Paul, Minnesota

The patient came under observation February 3, 1943, for high blood pressure and headaches of several years duration. She was fifty-three years of age, a housewife, married and had one child. One cousin had died of leukemia. The gall bladder, tonsils and teeth had been removed. Slight constipation was present. Menstruation had ceased at forty-seven and menopausal disturbances followed. She slept poorly, took three cups of coffee daily, and weighed 166 pounds.

The physical examination showed ears, eyes, nose and throat in good condition. An upper and lower denture was present. Over the base of the heart a rough systolic murmur was heard. The abdominal findings were normal. Slight varicose veins were present on both of the lower extremities. Blood pressure read systolic 220, diastolic 110 mm. of mercury. Urinalysis was negative. The blood showed hemoglobin 80 per cent, red blood count 4,340,000, and white blood count 8,850. The electrocardiogram showed only left ventricular preponderance.

She was advised to reduce weight gradually to 150 pounds. The blood pressure under this regimen gradually dropped, fluctuating from a systolic of 130 to 170 and a diastolic of 70 to 100 mm. of mercury. Menopausal symptoms disappeared, and she remained relatively well until December 29, 1944, when precordial pain appeared following a slight upper respiratory infection, and hospitalization became imperative. At the hospital the salient physical findings consisted of râles in both bases and a blood pressure of systolic 130, diastolic 80 mm. of mercury. The electrocardiogram revealed left ventricular extrasystoles, inverted T wave in lead II, low T in lead III with left axis deviation, suggesting myocardial damage. The x-ray picture of the chest showed thoracic osteoarthritis. The blood examination showed findings as recorded in Table I.

The sedimentation rate on December 30, 1944, was 84 mm. in one hour; on January 13, 1945, it was 55 mm. She was discharged from the hospital on January 17, 1945, with a diagnosis of myelogenous leukemia. Thereafter, the blood was examined from time to time, with the findings as recorded in Table II.

After the blood examination on March 4, 1946, x-ray therapy was advised. She chose the Mayo Clinic and remained under Dr. H. C. Giffin's observation and treatment from April 1, 1946 to April 13, 1946. He confirmed the diagnosis of chronic myelogenous leukemia and gave the following findings before treatment: Hemoglobin was 11.2 gm., erythrocytes 4,200,000, leukocytes 172,000. The platelets were 283,000. The differential count was: lymphocytes 1.0 per cent, monocytes 3.5 per cent, neutrophiles 54.0 per cent eosinophiles 0.5 per cent, basophiles 4.0 per cent myelocytes 9.5 per cent, metamyelocytes 10.0 per cent, promyelocytes 9.5 per cent, leukoblasts 7.5 per cent, stem cells 0.5 per cent. Blood smears were characteristic of myelogenous leukemia.

The edge of the spleen was palpable. A rough systolic murmur was heard over the base of the heart due to aortic sclerosis. Her blood pressure was systolic 190 to 210, diastolic 100 to 110 mm. of mercury. The eye grounds showed grade I narrowing of the arterioles.

TABLE I. BLOOD FINDINGS—MILLER HOSPITAL

	12-30-44	12-31-44	1-2-45	1-3-45	1-4-45	1-8-45	1-13-45	1-16-45
Hemoglobin	78				80	81	78	
Erythrocytes	4,120,000				4,370,000	4,330,000	4,140,000	
Leukocytes	60,800	86,000	88,000	85,000	86,000	74,000	60,000	89,000
Differential:								
Neutrophiles	75	86		65	61	83	60	
Lymphocytes	9	6		14	14	12	15	
Monocytes	1	4		5	5	3	4	
Eosinophiles	2	1		2	1	1	3	
Basophiles		3			1	1	1	
Myelocytes	3	12		2	3	12	2	
Promyelocytes	4	3		2	1	4	5	
Metamyelocytes					5		1	
Myeloblasts	6	1		10	9		9	

TABLE II

Date	Hemoglobin	Red Blood Count	White Blood Count
1-23-45	76	4,290,000	78,150
2-13-45	75	4,350,000	81,500
3-21-45	76	.....	103,000
4-10-45	68	.....	92,000
5-7-45	78	.....	98,000
5-28-45		.....	75,800
7-2-45	68	3,730,000	102,000
9-5-45	72	4,050,000	134,000
10-4-45	68	4,100,000	102,000
11-10-45	64	4,040,000	117,000
12-17-45	74	4,120,000	128,000
1-7-46	78	3,760,000	127,000
3-4-46	65	3,680,000	159,500

TABLE III

Date	Hemoglobin	Red Blood Count	White Blood Count
5-1-46	70	4,050,000	22,450
5-8-46	72	3,960,000	16,500
5-16-46	70	3,840,000	11,450
5-23-46	71	4,180,000	10,900
5-31-46	78	4,350,000	11,500
6-17-46	72	4,630,000	12,250
7-5-46	76	4,400,000	14,800
7-26-46	72	4,400,000	29,800
8-19-46	80	4,500,000	53,500
8-26-46	77	4,390,000	65,000
8-27-46	12.7 gm	4,720,000	64,000 Mayo
9-2-46	Concluded four x-ray treatments		25,100 Clinic
9-16-46	70	4,350,000	21,250
9-30-46	78	4,360,000	28,250
10-14-46	74	4,300,000	19,750
10-28-46	78	4,510,000	18,050
11-16-46	74	4,440,000	30,600
11-30-46	74	4,250,000	22,250
12-21-46	70	4,100,000	44,500
12-28-46	67	3,720,000	68,500
12-30-46			83,000 Mayo
1-8-47	Concluded six x-ray treatments		9,400 Clinic

Her height was 59 inches and weight 148 pounds with clothing. Urinalysis was negative. Blood urea revealed 34. mg., and the blood Wassermann test was negative. X-ray showed calcification of the aorta. Electrocardiogram revealed slurred QRS in lead II, left axis deviation, inverted T in lead III.

After receiving eight x-ray treatments at the Mayo Clinic the leukocyte count dropped to 40,000 and she returned to Saint Paul. Then the blood was checked from time to time so that she might receive further x-ray treatment if the leukocyte count should reach 50,000. Table III shows briefly the dates, blood findings and x-ray treatments.

TABLE IV

BLOOD FINDINGS—ST. JOSEPH'S HOSPITAL

Date	Hemoglobin	Red Blood Count	White Blood Count
1-21-47	50-55	3,480,000	227,000
1-22-47	..	..	143,000
1-23-47	..	..	134,000
1-24-47	47	2,590,000	108,000
1-25-47	..	..	99,000
1-26-47	..	..	92,000
1-27-47	35	2,710,000	110,000
1-28-47	..	..	113,000
1-29-47	45	2,180,000	133,900
1-30-47	..	..	64,000
1-31-47	33	1,760,000	46,000
2-1-47	..	..	50,000
2-2-47	..	..	41,000
2-3-47	50	2,400,000	89,000
2-5-47	47	2,560,000	95,000
2-7-47	58	2,820,000	109,000
2-10-47	50	2,470,000	206,000 Died

morphonuclear cells until the transfusions were started. After the transfusions were started, 1 to 4 polymorphonuclear cells appeared in the smears. There were five transfusions, the first on January 28, 1947 and the last on February 7, 1947.

A sternal puncture was performed on January 29, 1947, and showed the following findings; fat 3 per cent, plasma 64 per cent, myeloid layer 9 per cent, erythrocytes 24 per cent. The differential count revealed 96 per cent lymphocytes, of which many showed evidence of immaturity. An occasional granulocyte and normoblast was noted, and myeloblasts were present also. The pathologist made a diagnosis of lymphatic leukemia. Dr. Thomas J. Kenyon, formerly pathologist at St. Joseph's Hospital, concluded: "(1) The blood morphology indicates a leukemia of a lymphatic type. (2) In spite of the chronicity from the clinical standpoint, the morphology suggests an acute type."

TABLE V. DIFFERENTIAL COUNTS AND PLATELETS

Date	Polymorphonuclear	Basophiles	Small lymphocytes	Large lymphocytes	Monocytes	Early	Platelets
1-21-47			7	4		89	267,000
1-24-47			29	12	1	58	
1-26-47							25,000
1-27-47			13	3	2	82	
1-28-47			15			85	22,000
1-29-47			27	3	1	69	
1-30-47		1	2			97	
1-31-47			2		1	97	
2-1-47							20,000
2-3-47			1	4	2	93	238,000
2-4-47	4		2	3	1	90	139,000
2-7-47	1	1	12	4	8	74	142,000
2-10-47	1	1	18	4	5	71	

Returning home after the last x-ray treatment on January 8, 1947, gradual weakness became more and more pronounced. Nausea, vomiting, pallor, fever (104 degrees), sweating and ecchymoses appeared a few days later. These disturbances became worse, and she was sent to the hospital for further study and treatment on January 21, 1947. At the hospital, petechiae and ecchymoses increased, râles appeared in the chest and the mouth became very sore. In addition to the high fever she perspired freely and was restless. Blood transfusions, glucose and penicillin were given, but failed to stop the course of the disease. X-ray pictures of the chest were negative. On February 10, 1947, a right hemiplegia appeared, and a short time later the patient died.

The blood findings at St. Joseph's Hospital are shown in Tables IV and V and show a total absence of poly-

Discussion

Mixed leukemias have been reported by Turk, Hirschfeld, Naegeli, Browning, Herxheimer and Logefeil. This case, however, is not a mixed leukemia. It points, rather, to a retreat of the leukemic process to such an early stage in the usual course of leukemic development that the process could deviate readily and follow the lymphatic route and thus produce early lymphocytes indistinguishable from stem cells; or it is possible that these are early stem cells which could have become, if the patient had lived, either polymorphonuclear or lymphocytes.

The writer wishes to acknowledge his gratitude to the following pathologists and hematologists who studied either some or all of the blood findings:

Kano Ikeda, M.D., Pathologist, Charles T. Miller Hospital, Saint Paul, Minnesota

Thomas J. Kenyon, M.D., formerly Pathologist, St. Joseph's Hospital, Saint Paul, Minnesota

H. Z. Giffin, M.D., Clinical Section, Mayo Clinic, Rochester, Minnesota

C. H. Watkins, M.D., Clinical Section, Mayo Clinic, Rochester, Minnesota

Roy R. Kracke, M.D., Dean, Medical College of Alabama, Birmingham, Alabama

Hal Downey, M.D., Professor of Anatomy, University of Minnesota

E. T. Bell, M.D., Professor of Pathology, University of Minnesota

ENHANCING EFFECTS OF PENICILLIN

E. S. PLATOU, M.D.

Minneapolis, Minnesota

Since the introduction of penicillin, the problem of its rapid absorption and excretion has occupied the attention of many workers. Biologic methods for determining plasma levels of penicillin brought about a more precise knowledge of the concentration of the drug, but the duration of effects on bacteria *in vivo* needs further study. Large losses in the urine were recognized early when shortages required recovery and re-use. The renal clearance of commercial penicillin is 750 c.c. to 1,200 c.c. per minute, approximating that of total renal plasma flow. When crystalline penicillin G or X is given intramuscularly in aqueous solution, 60 per cent of it can be recovered in the urine by the end of an hour. Blood levels fall off at the rate of approximately 70 per cent per hour after penicillins are given in aqueous solution intramuscularly. In spite of lower renal clearance, penicillin K yields relatively low plasma levels due to an organic combination with proteins which also lessens its potency. An effective plasma concentration of penicillin mixtures is presently thought to be about 0.03 units per cubic centimeter for most penicillin-susceptible organisms. Whether a sustained level above this arbitrary minimum or a periodic "peak" is preferable has been controversial. Persistently high concentrations have been assumed to be effective in combating unusual cases with fulminating or stubborn infection; a combination of constant and "peak" effects is believed by some to be even better.

Approaches to the problem of enhancing and prolonging the effectiveness of penicillin have included such measures as:

1. Varying and multiple routes of administration.
2. Slowing absorption.
3. Blocking tubular excretion.
4. Employing selective inhibitory effects to alter tubular enzymatic mechanisms (caronamide).
5. Combining methods.
6. Reactivating insoluble penicillin salts *in vivo*.
7. Using an alternate antibiotic with slow absorption curve.
8. Varying frequency and size of dosage.

TABLE I. PENICILLIN—AVERAGE CONCENTRATION AND DURATION OF EFFECTS
10,000—25,000 U. given to infants and children

Route	Stat.	½ hr.	1 hr.	2 hr.	3 hr.	Absorption Variation
I.V.	2.5	.15	.1	.03	trace	0
I.M.	0	.5	.3	.2	.1	0
Sub-Q	0	.3	.3	.2	.1	0
Oral	0	.5	.2	.08	.03	+
Suppression of Renal Clearance—2 to 5 fold increase						+

Modified from Kolmer, Cooke, Goldring, and Husson. Dosage, body weight, fluid intake, renal function, and method may alter levels

Varying and Multiple Routes of Administration

For the great majority of penicillin-susceptible infections, periodic levels of penicillin from 0.01 to 0.1 units per c.c. of plasma twice daily are adequate. To attain such levels, intramuscular injections of aqueous penicillin in doses of 10,000 to 25,000 units, or oral doses of 50,000 to 100,000 units, have been used successfully in infants and children.

In infections of the respiratory tract, inhalation in aerosol has been useful, particularly as an adjuvant to intramuscular administration; surprisingly high levels have sometimes been attained after inhalation alone. Bryson and Grace,[1] and Prigal[10] have reported that penicillin given in doses of 100,000 to 200,000 units suspended in aerosols of propylene glycol-glycerine, or in zephiran-glycerine alone, produces apparently adequate blood levels for as long as five hours. This mode of therapy has proved beneficial in purulent sinusitis, as well as in fibrocystic disease, intrinsic infectious asthma, bronchiectasis and other diffuse bronchial or bronchiolitic diseases. Although a suitable nebulizer, a source of oxygen and a rubber tube are adequate equipment for older children, in infants and younger children an apparatus such as that described by Prigal[10] is perhaps superior.

The method of penicillin therapy described by Bryson and Grace[1] for respiratory infections combines penicillin intramuscularly in wax and oil every twenty-four hours (300,000 units), neosynephrine by nebulizer, penicillin 100,000 units in 3 c.c. of zephiran (1:1,000 aqueous as a detergent) for inhalation every eight hours, and deep breathing to accomplish the topical principle.

Local penicillin injected into pleural, pericardial, peritoneal, and synovial cavities enhanced effects of routine administration. Similarly, in meningitis, small well-diluted intrathecal doses of 5,000 to 10,000 units have been helpful, though larger ones have sometimes been followed by immediate or late irritative and degenerative effects on the nervous system.

In thrombophlebotic lesions, i.e., osteomyelitis, sinus thrombophlebitis, subacute bacterial endocarditis, et cetera, apparent enhancement of penicillin effects has followed concomitant use of anticoagulants. Since the minute lesion of meningitis has been shown to be throm-

Because of the illness of Dr. Erling Platou, his inaugural thesis was read by Dr. Edwin Robb.

bophlebotic, the question has been raised whether anticoagulants might be considered even for this disease.

When oral penicillin was first used, variations of concentration occurred in different patients and even in the same patient from hour to hour; fluid and food ingestion were shown to influence this. It was believed that penicillin was ineffective when taken by mouth because of destruction in the stomach, irregularities in absorption, and inactivation by residual food. Experiments conducted by Finland, McDermott, Libby, Cutting and Hoffman and Volini have resulted in several interesting conclusions:

1. The oral dose of penicillin must be about five times the intramuscular dose to produce comparable blood levels for three hour periods.
2. Addition of binding or buffering substances does not increase therapeutic levels significantly.
3. Saline solutions of penicillin were more easily passed out of the stomach by spurts, causing more rapid and complete total absorption.
4. The effects of food were best minimized by giving penicillin one hour before meals, after a three- or four-hour fast.

The work of Hoffman and Volini[5] has shown that in older children and adults penicillin levels are best maintained orally by an initial dose of 200,000 units in saline followed in one hour by 100,000 units and then 100,000 units every three hours. By this plan, blood levels well above 0.03 units per cubic centimeter were maintained, although individual variations occurred. Doses of 25,000 have been reported by Husson[6] as producing adequate levels in infants.

Slowing of Absorption

Several methods of slowing absorption have been tried, including such simple physical changes as cooling the site of injection. The most effective methods developed thus far have employed suspensions in beeswax and peanut oil (Romansky formula) or in procaine and sesame oil.

The first major attempts to prolong activity of penicillin by the addition of a binding substance were made in 1943 and 1944. Beeswax was found to be best for this purpose, although it produced rather frequent tissue reactions. By using a small concentration of beeswax in peanut oil, however, it was possible to avoid most of these. Concentrations of 4 to 4.8 per cent beeswax in peanut oil were thought to produce a minimum of local inflammatory processes, and subcutaneous injection was found to be less painful than intramuscular. 100,000 units of penicillin in 1 c.c. of this mixture prolonged effective therapeutic levels of penicillin for six to eight hours after injection; 200,000 units increased absorption time slightly but 300,000 units in 1 c.c. of 4.8 per cent beeswax in peanut oil (given intramuscularly) prolonged blood levels for twenty-four hours. Less than 300,000 units per injection was considered inadequate and more than 300,000 units merely prolonged the initial peak blood level but did not give sustained concentrations of much greater magnitude.

Recent work by Dowling and Romansky[3] indicates that the greater the particle size of penicillin in an injectable mixture, the greater its effect in delaying absorption. They found that in order for a mixture to prolong absorption for twenty-four hours, at least 50 per cent of the particles in the mixture should have diameters of 50 microns or more. Because amorphous penicillin does not achieve this as well as crystalline penicillin, these investigators believe that crystalline calcium penicillin, when given intramuscularly in 2 per cent beeswax in peanut oil, produces more constant absorption and more effective blood levels than any other mixture we have at the present time.

A good body of evidence has accumulated to indicate that procaine penicillin, as proposed by Sullivan and his associates, will have an equally useful place. After injections of 1 c.c. containing 300,000 units, blood levels are usually still maintained in the therapeutic range after twenty-four hours. Up to the present time, undesirable side effects related to procaine or the menstruum of sesame oil have been conspicuous by their rarity. It is hoped that this mixture will prove to be as effective and more practical than the better-known oil-beeswax preparations.

Loewe and his associates have described a water-soluble preparation of penicillin containing gelatin-dextrose, ephedrine, and epinephrine which they claim will maintain measurable levels for twenty-four hours or longer and retain stability at room temperature for more than a year.

Blocking Tubular Excretion

About 80 per cent of penicillin is excreted by normal renal tubules and found in urine. Thus, any drug which could effectively yet harmlessly block tubules might conceivably raise plasma concentrations. Diodrast or iodypyrin (used in urography) and para-amino-hippuric acid (used in functional tests of the tubules) have been successfully administered for this purpose. Penicillin excretion can be suppressed almost completely by continuous intravenous infusion of either of these drugs, and high levels of penicillin can be obtained, though such large quantities of the inhibitors are often required that the method has been found somewhat impractical. Despite this handicap, it has accounted for some striking therapeutic results in resistant infections. Benzoic acid and sodium benzoate have also apparently enhanced plasma concentrations.

Employing Selective Inhibitory Effects on Tubular Enzymatic Mechanisms

Beyer et al introduced caronamide, believed to be wholly excreted by glomerular filtration. It probably has a selective inhibitory effect on the enzymatic mechanism of the tubules, so it suppresses tubular excretion in a manner different from the mass competition or "blocking" with diodrast or para-amino-hippuric acid.

Strauss et al[12] studied the effectiveness of caronamide and sodium benzoate individually and in combination. Sodium benzoate has been shown to have an anti-penicillinase effect which, some contend, may explain its properties more accurately than its blocking effect. Its lower

toxicity and cost might make it more desirable. The dose employed has been 1.2 gm. per 100,000 units. Caronamide is supplied in 0.5 gm. tablets and is given in doses of 0.4 gm. per kilo per day. Since it is excreted in four hours, the dose-interval should be three hours.

oral penicillin. Eighty per cent of the patients had assayable levels at twenty-four hours, after 300,000 units of intramuscular penicillin alone, the average concentration being 0.058 units per 1 c.c. at this time. Intramuscular injection of 300,000 units followed by 100,000

TABLE II. EFFECT OF CARONAMIDE AND SODIUM BENZOATE ON PLASMA PENICILLIN CONCENTRATION AFTER INTRAMUSCULAR AND ORAL PENICILLIN THERAPY

300,000 units in oil followed by 50,000 units by mouth at 12, 15, 18, and 21 hours

Subject	Sex	Age	Drug	Plasma Penicillin Concentration				
				15 hrs.	18 hrs.	24 hrs.	26 hrs.	28 hrs.
D	F	3 mo.	P only	0.51	1.02	0.13	.06	.06
C	M	3 mo.	P+C+B	4.10	1.024	0.256	06	.06
D	M	3 mo.	P+C+B	1.024		0.51		.06
H	F	4 yr.	P+C+B	.03	.03	0 06	.03	03
N	M	4 yr.	P+C+B	.03	.03	.256	.03	.03

Some of the observations of Strauss on caronamide and sodium benzoate were to the effect that caronamide or sodium benzoate given orally enhanced the plasma penicillin concentration following either oral or intramuscular administration of penicillin. Oral penicillin in combination with both caronamide and sodium benzoate resulted in greater enhancement of the plasma penicillin concentration than was found with either of the two drugs alone. The trio was more effective than either of the pairs. Both caronamide and sodium benzoate were, however, shown to have a serious limitation. Under certain conditions they apparently accentuate the variable absorption already observed after oral administration of penicillin.

Crosson et al[2] reported that caronamide given orally "elevates" the plasma concentration of penicillin two to seven times following its oral and parenteral administration. They concluded that both oral and intramuscular administration of penicillin is greatly enhanced by the oral use of caronamide.

Seeler, Wilcox, and Finland[11] made similar observations in older subjects but noted that approximately twice the dose of caronamide was necessary to produce equivalent levels in persons of younger age groups.

Rapaport and his associates reported no toxicity due to caronamide in fifteen children. Penicillin levels were markedly elevated with doses of 0.4 gm. per kilo per day given in divided doses at three-hour intervals. Eagle contends, "To maintain an effective concentration of such blocking agents may prove no less laborious and with some of these agents no less costly than to repeat the injections of pencillin or to increase the dosage."

Combining Methods

Combined methods of penicillin administration and clearance suppression have been extensively studied. Trussel, Sinclair, and Buchanan[13] recently reported observations made after patients had received intramuscular injections of penicillin in 2 per cent beeswax in peanut oil. These were compared with levels obtained from others who received similar injections complemented by

units orally at twelve, fifteen, eighteen, and twenty-one hours yielded assayable levels in all subjects at the end of twenty-four hours, the average level at this time being 0.139 units per c.c.

Suppressed renal clearance has been most effectively accomplished to date by a combination of sodium benzoate and caronamide. Combining this suppression of renal clearance demonstrated by Strauss with the delayed absorption technique of Trussel and associates, we have attempted to raise and prolong levels in infants.

Table II reveals a tendency toward higher and more prolonged levels in infants who received penicillin in oil and beeswax and oral penicillin together with caronamide and sodium benzoate. A high "peak" is demonstrated but the number of observations is still small. Study is now in progress to determine whether this planned combination may have sufficient merit to justify its use in overwhelming infections.

Reactivating Insoluble Penicillin Salts in Vivo

After injections of silver, mercuric, and ferric penicillinates into rabbits, Monash[9] was recently able to show that these inactive and insoluble penicillins can be reactivated *in vivo*. One injection of 20,000 units of silver or mercury penicillinate produced blood levels of 0.08 units per c.c. at seventeen hours; one of ferric penicillinate, a level of .16 units per c.c. at seventeen hours. Similar blood levels were also recorded after the use of organic substances such as brilliant green penicillinate.

Using An Alternate Antibiotic with a Slow Absorption Curve

Eagle and his associates[4] have studied bacitracin. This substance, discovered by Johnson, Anker, and Meleny[8] in culture filtrates of B. subtilis, possesses bactericidal properties and has a low renal clearance. Although samples studied to date are gravimetrically only one-twelfth as active as penicillin G *in vitro*, in this respect its slower excretion and resulting higher blood level raises the hope that similar preparations may eventually be forthcoming.

(Continued on Page 1140)

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(Continued from Page 1138)

Varying the Frequency and Size of Dosage

Following development of biologic tests to determine plasma concentration of penicillin accurately, and later general acceptance of a therapeutic threshold of 0.03 units per cubic centimeter, there has developed a tendency towards attempting to maintain concentrations at or above this therapeutic minimum without consideration for duration of bacteriostatic effects.

It has recently been observed that "periodic peaks" of penicillin are probably adequate alone for many, if not most, Gram-positive infections. Experiments of Jawitz[7] appear to show that the effects of penicillin on streptococcal infections in the mouse last much longer than measurable blood concentrations. Assayable levels persisted for only one hour after injection of the drug, while depression of bacterial population continued for eight hours or longer. Zubrod[14] investigated the relative efficacy of different dosage schedules of penicillin in beta hemolytic streptococcal infection of mice. He found that in treatment with multiple doses of aqueous penicillin, survival depends more on total dose administered than on the number of fractions into which the total dose is divided. Marshall states that the maintenance of a constant blood concentration is probably unnecessary for efficient therapy in the human. He believes that it should be possible to accomplish satisfactory therapy with aqueous penicillin given in even one, two or three injections per day. After all, bacteriostasis is but a part of the recovery mechanism. Recently, large doses of aqueous penicillin given every twelve hours have been reported by several clinics to be very effective.

Levels so obtained may not be adequate to combat all bacterial infections. Sustained very high concentrations of penicillin (possibly augmented by "peak" doses) appear to be the best available direct method for attacking severe infections. Strain resistance to penicillin *in vivo* has rarely been observed as an acquired characteristic even following exposure to subcurative doses of antibiotics. Penicillin resistance usually develops slowly and is not a frequent clinical problem. Mixed infection more commonly explains what may seem like strain resistance. The need for unusual enhancement of effects is therefore not common. When naturally resistant mutants are suspected, solution of resultant problems should be sought in clinical judgment and biologic tests for strain susceptibility. The dosage and method of administration of penicillin should be planned in such a manner as to eliminate both susceptible and naturally resistant variants as rapidly and as completely as possible.

Summary and Conclusions

1. Adjuvant or multiple routes of administration of penicillin result in additive effects.

2. Slowing absorption by injecting suspensions of large crystalline particles of penicillin in beeswax and peanut oil, or in procaine and sesame oil, offer methods for maintaining increased levels.

3. Blocking of tubular excretion with diodrast or para-amino-hippuric acid enhances penicillin levels but is still impractical.

4. Suppression of renal clearance with sodium benzoate and caronamide will elevate plasma levels of penicillin in most instances.

5. Combined methods for slowing absorption and suppressing renal clearance are still in the experimental stage.

6. The reactivation of insoluble penicillin salts may prove to be useful, and more effective antibiotic agents having lower renal clearances may yet be developed.

7. Aqueous solutions of injectible or oral penicillin in large infrequent doses are probably adequate for most infections due to susceptible organisms.

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The meeting was adjourned.

A. E. Cardle, M.D., *Secretary*

ARE YOUNG SPECIALISTS DENIED A CHANCE?

(Continued from Page 1120)

of investigation and lead automatically to full membership after a year. Also, letters were sent by the Society's secretary to all the local hospitals urging that returned servicemen be accommodated to the fullest extent. Other localities might well follow this example.

If there are localities in which established doctors are throttling competition by preventing hospital appointments for beginners, the hospital staffs constitute the agency for correcting the situation. Local societies might well review their attitudes toward strangers locating in their communities, with a view to revising provisions of constitutions where indicated.

Would You Use a Screen to Collect Dust?

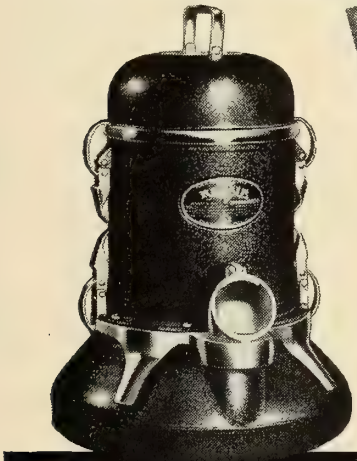


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Reports and Announcements

INTERSTATE POSTGRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The International Medical Assembly of the Interstate Postgraduate Medical Association will be held November 9 to 12, 1948, at the Public Auditorium in Cleveland, Ohio.

The program this year, as in former years, will consist of diagnostic clinics and addresses at the morning, afternoon and evening sessions by outstanding educators and clinicians from this and foreign countries. Extensive commercial exhibits will be on display.

The registration fee for the four-day session is $5.00. Doctors in uniform, interns, nurses, dietitians and technicians will be admitted upon the payment of $1.00.

The officers of the Association this year are: Dr. Herman L. Kretschmer, Chicago, president; Dr. Evarts A. Graham, St. Louis, president-elect; Dr. John F. Erdmann, New York, and Dr. Frank H. Lahey, Boston, presidents of clinics.

Hotel reservations should be made through the Housing Bureau for Interstate Postgraduate Medical Assembly, 511 Terminal Tower, Cleveland 13, Ohio.

AMERICAN COLLEGE OF SURGEONS

The thirty-fourth clinical congress of the American College of Surgeons will be held from October 18 to 22, 1948, in Los Angeles, with headquarters at the Biltmore Hotel. Surgeons from thirty-two states, two Canadian provinces and one from Sweden, Dr. Crafoord of Stockholm, will participate in the program. The research work of some 250 surgeons and their assistants will be reported at the eight sessions of the Forum on Fundamental Surgical Problems.

Twenty-four hospitals in Los Angeles and vicinity will hold operative and nonoperative clinics, and telecasts of operations from the Los Angeles County Hospital will be shown each day at the Biltmore Hotel.

Dr. Dallas B. Phemister of Chicago will be inaugurated as president of the college to succeed Dr. Arthur Wallen of Boston. Dr. Howard A. Patterson of New York will be elected first vice president, Dr. Carl H. McCaskey of Indianapolis, second vice president, and Dr. Paul B. Magnuson of Washington continues as secretary.

NORTHERN MINNESOTA ASSOCIATION

The twenty-eighth annual meeting of the Northern Minnesota Medical Association was held in Duluth on August 20 and 21.

Among subjects discussed in papers presented at the two-day meeting were surgery of the colon, electrocardiograms, abnormal pregnancy, treatment of burns, infant diseases, and general medical diagnosis. Speakers included Dr. Wilford J. Deweese, Bemidji; Dr. Arthur C. Kerkhof and Dr. Tague C. Chisholm, Minneapolis; Dr. B. Marden Black and Dr. Walter C. Alvarez, Rochester; Dr. N. Logan Levin, Saint Paul, and Dr. Earl E. Barrett, Duluth.

A clinical-roentgen-pathological conference, arranged by Dr. E. L. Tuohy and Dr. Henry G. Moehring, Duluth, was a feature of the second day of the meeting.

Principal speaker at the annual banquet, held in Hotel Duluth on August 20, was Senator Joseph H. Ball, who attacked the proposed Wagner-Murray-Dingell bill, declaring that it would result in "medical dictatorship" by the government. Other speakers at the banquet were Dr. A. E. Cardle, Minneapolis, and Dr. E. M. Hammes, Saint Paul, president and president-elect, respectively, of the Minnesota State Medical Association.

At a business session, the association members elected Dr. R. H. Puumala, Cloquet, president of the group to succeed Dr. Charles W. Vanderslius, Bemidji. Other offices named were Dr. Wilford J. Deweese, Bemidji, vice president, and Dr. C. L. Oppegaard, Crookston, secretary-treasurer. Alexandria was selected as the meeting place for the 1949 convention.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

Two scientific papers were presented at a meeting of the Minnesota Society of Neurology and Psychiatry held at the Minnesota Club in Saint Paul on September 14.

Dr. Ernest M. Hammes, Jr., presented an inaugural thesis on "Familial Periodic Paralysis," and Dr. Marvin Sukov gave as his inaugural thesis a paper on "Observations on Teaching Psychotherapy."

A NEW REHABILITATION CENTER

A new therapeutic center, the St. Paul Rehabilitation Center, has been established at 279 Rice Street, St. Paul. Physical therapy, occupational therapy, and speech therapy are given in unified service by qualified therapists.

Conditions treated include industrial injuries, infantile paralysis, fractures, cerebral palsy, arthritis, neuritis, amputees, paraplegias, skin disorders, congenital defects, contractures resulting from burns, and postural and structural defects of muscles, bones, and joints. Speech disabilities treated include delayed speech, sound substitutions, speech of the hard of hearing, cleft palate speech, cerebral palsy speech, aphasic speech, voice disorders, and stuttering. Throughout the Center new modern therapeutic equipment has been installed.

The aims of the Center are prevention of unnecessary handicaps, hastening of rehabilitation, restoration of function if possible, utilization of residual function, and adjustment of patient to any residual disability. All admissions are made upon the referral of medical doctors.

The medical policies of the Center are guided by a Medical Advisory Board which consists of seven doctors appointed by the Ramsey County Medical Society.

An Executive Committee formulates policies. This committee is composed of representatives from the initiating agency, the Family Nursing Service, and the three sponsoring agencies, the Minnesota Society for Crippled Children and Adults, Inc., Junior League of St. Paul, Inc., and the Wilder Charity.

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In Memoriam

ROBERT EARL

Dr. Robert Earl, a practicing physician in Saint Paul for more than fifty years, died August 11, 1948.

Robert Earl was born in Lansing, Iowa, on August 27, 1872. He moved to Minneapolis at ten years of age. He graduated from the University of Minnesota Medical School in 1896 and interned at Bethesda Hospital, Saint Paul, where he began a fruitful period of surgical training under Dr. Edouard Boeckmann and Dr. E. M. Lundholm. He received a diploma from the New York Post Graduate School and in 1911 spent a year of study in Europe, especially in the field of brain surgery. As a result, he was one of the first surgeons in this region to interest himself in the field of neurosurgery. This was essential to the development of a neurological and psychiatric center at Mounds Park Sanitarium in collaboration with such early neurologists as Dr. Eugene Riggs and Dr. Charles Ball.

Dr. Earl was instrumental in having the Gillette State Hospital located in Saint Paul and for years was very active on the surgical staff. In 1910 Dr. George Earl became associated with Dr. Robert Earl in the practice of medicine, from which association the Earl Clinic developed.

Dr. Earl was a Diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons, a member of the Western Surgical Association, the American Medical Association, Minnesota State Medical Association, Minnesota Academy of Medicine, the Saint Paul Surgical Society and the Ramsey County Medical Society, of which he was president in 1918. He recently became a member of the Fifty Club of the Minnesota State Medical Association.

Dr. Earl is survived by his wife; a daughter, Mrs. James Slocum of Minneapolis; a son, Dr. John Earl of Saint Paul; five grandchildren; two sisters, Emily Earl and Mrs. Hilda Anderson of California, and a brother, Dr. George Earl of Saint Paul.

LEONARD EASTON CLAYDON

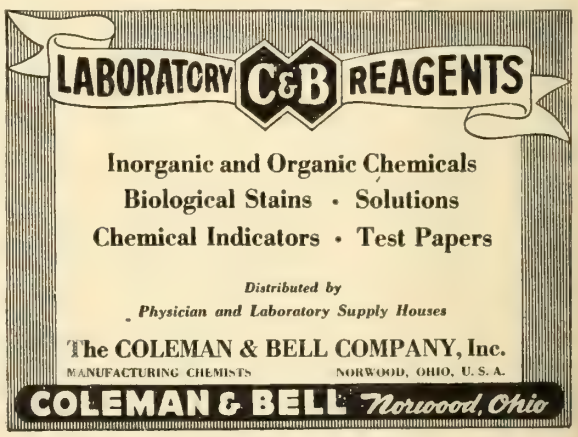
Dr. L. E. Claydon, a physician and surgeon of Red Wing, Minnesota, since 1902 and well known as a musician and traveler, died at his home August 15, 1948. He was seventy-nine years of age.

Dr. Claydon was born in Redditch, England, April 5, 1869, and came with his parents to Perham, Minnesota, in 1879. He graduated from the University of Minnesota School of Pharmacy in 1885, and for three years was pharmacist at the Northern Pacific Beneficial Association Hospital at Brainerd. Studying medicine at the University of Minnesota Medical School, he graduated in 1895. He practiced at Mazeppa, Minnesota, from 1895 until 1902, when he moved to Red Wing. Associated at one time with Doctors Cremer and Johnson, he later formed the Claydon Clinic with his son, Dr. Donald R. Claydon. Upon the latter's death in 1941, another son, Dr. Howard Claydon, became associated with him in practice.

Dr. Claydon was a member of Christ Episcopal Church, the Red Men's Club, the Elks Club, Masonic Lodge, Order of the Eastern Star, Odd Fellows, Workman Lodge and the AOUW. He was also a member of the Goodhue County Medical Society, the Minnesota State Medical Association, the American Medical Association and the Southern Minnesota Medical Association.

Dr. Claydon was fond of traveling and made his first trip abroad in 1900. In 1909 he went to Sweden; in 1914 to the Holy Land; in 1922 to South America; in 1924 to England and France; in 1926 to Panama; in 1928 to Europe; in 1930 to Russia, and in 1937 to South America. In addition, he circled the globe three times. His daughter, Marjorie, who accompanied him on his trip around the world in 1920, wrote a book on their experiences entitled "Around the World with Dad."

Dr. Claydon is survived by his wife, a son, Dr. Howard Claydon, a brother, P. H. Claydon, and a sister, Mrs. Carl Bull, of Wolf Point, Montana. His daughter, Marjorie, and son, Dr. Donald R. Claydon, preceded him in death.



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Of General Interest

Dr. Clyde E. Wilson, Blue Earth, was elected president of the Blue Earth school board at a meeting held during the summer.

* * *

Dr. J. R. Hodgson, Rochester, spoke on "Roentgenologic Diagnosis of Lesions of the Gastrointestinal Tract" at a meeting of the Third District Medical Society in Estelline, South Dakota, on August 12.

* * *

Dr. Winchell McK. Craig, Rochester, was elected president of the Harvey Cushing Society, named after the pioneer in neurosurgery, at a meeting held in San Francisco in August.

* * *

Dr. and Mrs. A. W. Adson, Rochester, journeyed to Honolulu, Hawaii, early in September, where Dr. Adson spoke before delegates to the Pan Pacific Surgeons Conference.

* * *

The partnership of Dr. A. J. Emond and Dr. J. S. Emond, Farmington, was announced dissolved on August 20. The brothers are continuing individual practice in their offices in the Emond Hospital building.

* * *

Dr. A. W. Nuetzman, Faribault, attended a dinner meeting of designated medical examiners of the Civil Aeronautics Administration in Minneapolis on September 3.

* * *

A former Winona resident, Dr. Richard J. Wagner began a fellowship in surgery at the University of Minnesota Hospitals during the middle of August. He completed his internship at Swedish Hospital in Minneapolis in June.

* * *

More than 150 persons attended a homecoming reception in honor of Dr. Magnus C. Peterson, superintendent of the Rochester State Hospital, in the state hospital auditorium on August 17. Dr. Peterson had recently returned from a two-month tour of Europe.

* * *

Dr. John J. McLeod, Jr., formerly of Birchwood, Wisconsin, began practice on August 3 at the clinic of Dr. James A. Cosgriff in Olivia. A graduate of the Marquette University School of Medicine, Dr. McLeod served his internship at St. Mary's Hospital, Duluth.

* * *

On September 9, Dr. Vernon L. Hart, Minneapolis, left New York to travel to the American Occupied Zone of Germany to spend six weeks taking part in a teaching program in various American hospitals. During the teaching program, Dr. Hart served as a civilian consultant for the office of the Surgeon General.

* * *

Formerly of Le Centre, Dr. Leonard Prochaska became associated in practice with Dr. A. A. Brink of Baudette in August. Dr. Prochaska, a graduate of the Marquette University School of Medicine, has studied at Minneapolis General Hospital.

* * *

A former native of Zumbrota, Dr. Robert J. Anderson became medical director and chief of the tuberculosis control section of the U. S. Public Health Service on September 1. Dr. Anderson, living in Washington, D. C., had been assistant chief of the section since 1946.

* * *

Though plans had not been definitely made, it was announced on August 12 that Hills would soon have a resident physician, the first since 1940. A Dr. Barr of Sioux Falls had indicated that he would like to conduct a medical practice in the city.

* * *

Superintendent of the Mineral Springs Sanitarium, Dr. Karl H. Pfuetze spoke at a meeting of the Rotary Club in Stillwater on September 2. Dr. Pfuetze discussed some of the phases of operation of the institution he heads.

* * *

West-Central Minnesota Health Day was held in Willmar on September 9. Among physicians appearing on the program were Dr. B. O. Mork, Jr., Worthington; Dr. W. W. Yaeger, Marshall; Dr. Robert Barr, Minneapolis, and Dr. B. J. Branton and Dr. Lloyd Gilman, both of Willmar.

* * *

At the meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, held early in September at Hot Springs, Virginia, Dr. R. D. Mussey, Rochester, presented the presidential address, and Dr. L. M. Randall, Rochester, spoke on the subject, "Elderly Primigravid Women."

* * *

Two Rochester physicians presented papers at a meeting of the Boone-Story County Medical Society at Ames, Iowa, early in September, Dr. D. O. Ferris spoke on "Traumatic Injuries of the Genito-urinary Tract," while Dr. H. M. Odel's subject was "Objectives in the Management of Acute Renal Failure."

* * *

Near the end of August, Dr. John Smyth, after half a year as an associate in practice with Dr. F. H. Baum-

(Continued on Page 1148)



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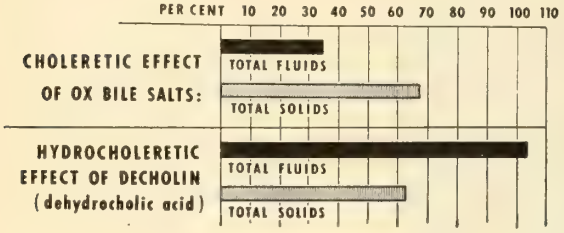
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Ivy, A. C., et al: Am. J. Dig. Dis. 7:333 (Aug.) 1940.

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(Continued from Page 1146)

gartner in Albany, announced that he intended to move soon to Lester Prairie to open his own practice. Before he began his practice in Albany with Dr. Baumgartner, Dr. Smyth served a tour of duty in the navy.

* * *

While attending a meeting of the American Association of Blood Banks in Buffalo, New York, late in August, Dr. T. H. Seldon, Rochester, presented a paper entitled "Ways and Means of Obtaining Sufficient Donors." During a business session of the meeting, Dr. Seldon was elected vice president of the group.

* * *

Dr. A. C. Anderson, formerly of Winsted, has taken over the practice of Dr. R. E. Erickson in Hector. A graduate of the University of Minnesota, Dr. Anderson practiced for the past two years in Winsted after spending two years in the army. He began his duties in Hector on August 30.

* * *

The Northfield clinic, conducted by Dr. R. F. Mears and Dr. Joseph C. Belshe, in August, opened branch offices in Randolph. It was announced that remodeling of the front of the main office in Northfield was scheduled for early this fall. Recently the interior of the building was completely redecorated and remodeled.

* * *

As guest speaker at the Midsummer Radiological Conference of the Rocky Mountain Radiological Society, held in Salt Lake City during August, Dr. J. D. Camp of Rochester presented two papers entitled "Sources of Error in Encephalography and Ventriculography" and "Significant Roentgenologic Findings in Intracranial Disease."

* * *

A former Benson resident, Dr. Cassius J. Van Slyke was named director of the National Heart Institute early in August. A graduate of the University of Minnesota Medical School in 1927, Dr. Van Slyke has been associated with the U. S. Public Health Service since 1932. He has directed the research grants-in-aid and the fellowship program of the National Institute of Health since 1945.

* * *

Dr. Dale Furnell, formerly of Saint Paul, has become associated in practice with Dr. W. J. Lund at the Northern Pacific Clinic in Staples. A graduate of the University of Minnesota Medical School in 1945, Dr. Furnell has studied at Ancker and Abbott Hospitals and has served as a resident physician at the Northern Pacific Hospital in Saint Paul.

* * *

Plans were made in August to hold a Health Day in Mankato on October 13. The program for the event listed round-table discussions, health movies, talks on community health problems, and addresses on numerous health topics by physicians, public health nurses, school

representatives and mental hygiene experts. An address by Governor Luther Youngdahl was scheduled for the evening program.

* * *

Soloist at a Pop concert in Saint Paul on August 25 was Dr. Charles Peluso, Minneapolis, making his first solo appearance at the concerts since 1945 when he was presented on a program while on leave from the navy. A graduate of the University of Minnesota Medical School, Dr. Peluso served his internship at St. Luke's Hospital in Duluth.

* * *

Dr. Harold R. Mundall has opened an office at 1812 Selby Avenue, Saint Paul, for the practice of medicine. Dr. Mundall graduated from Marquette University Medical School in 1945 and served in the Army three years, being stationed at the tuberculosis hospital at Waukesha, Wisconsin, and at the Veterans' Hospital at St. Cloud before his discharge June 3, 1948. He was commissioned as a captain.

* * *

On August 16, Dr. Frederich G. Gunlaugson, a former staff member of the Fergus Falls State Hospital, joined the staff of the Minneapolis Health Department as director of communicable disease control, filling a post that had been empty for almost a year. Dr. Gunlaugson is a graduate of the University of Minnesota and Johns Hopkins University. He has practiced medicine in Moorhead.

* * *

It was announced on August 5 that Dr. Harry L. Berge, of Isle, had become a part-time assistant of Dr. W. F. Nordman in Mora. A graduate of the University of Minnesota Medical School, Dr. Berge studied surgery for two years at Minneapolis General Hospital. He has served as chief of surgery at Mason General Hospital, Long Island, New York, and as acting chief of surgery at Camp Lee, Virginia.

* * *

The marriage of Dr. Harry J. Anderson, formerly a resident of North Branch, and Miss Darlene Mortenson, formerly of Benson, took place on August 21 in the chapel at Fort Snelling. Dr. Anderson, a graduate of the University of Minnesota Medical School, is a resident physician in the Department of Psychiatry and Neurology at the University Hospitals and Veterans Hospital, Minneapolis.

* * *

Dr. and Mrs. Anderson Hilding, Duluth, left for Europe on August 27 to attend the 1948 conference of the Collegium Oto-Rhino-Laryngologicum Amicitiae Sacrum held September 1 to 5 in Copenhagen, Denmark. The collegium, an international research society, was resuming its annual meetings after a nine-year wartime suspension. Following the conference in Copenhagen, Dr. and Mrs. Hilding went on a trip through Sweden.

* * *

The Park Region Health Day was held in the high school auditorium at Fergus Falls on September 29.



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1. Kasper, J. A. and Jeffrey, I. A.: A Simplified Benedict Test for Glycosuria, Amer. J. Clin. Pathology, *14*:117-21 (Nov.) 1944.

2. Haid, W. H.: The Use of Screening Tests in the Clinical Laboratory, J. Amer. Med. Tech., *8*:606-14 (Sept.) 1947.

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Among other events, three panel discussions were held, covering the following topics: "Our Community Health Problems," "How Can We Prevent Behavior Problems in Children?" and "The School's Part in Your Child's Health." Included in those appearing in the discussions were Dr. Mario Fischer, Duluth, and Dr. Edward Anderson, Minneapolis.

* * *

Expansion of the public health nursing service in Nobles County was announced on July 22 by Dr. B. O. Mork, Jr., Worthington, medical director of Public Health Unit No. 5. It was stated that a second public health nurse, Anna Marie Christman, formerly of Glen Lake Sanatorium, would assume her duties in Nobles County on September 1, thus bringing the county a step closer to the ideal proportion of one nurse for each 5,000 persons in the population.

* * *

Dr. Albert Faulconer, Jr., Rochester, spoke on "The Treatment of Anoxic Encephalopathy" at a meeting of the Kansas City Society of Anesthesiologists in Kansas City, Missouri, on September 8. The following day he presented two papers before the Kansas Society of Anesthesiology and the Salina County Medical Society. Titles of the papers were "Choice of Anesthetic Agent and Method" and "Some Factors Influencing the Administration of Inhalation Anesthesia."

* * *

Lake County, with a record of no tuberculosis deaths in 1947, was given special recognition at a ceremony held at a Rotary Club meeting in Two Harbors on August 17. Accreditation certificates were presented by Dr. Mario Fischer, Duluth, acting director for Health District No. 4 of the Minnesota Health Department, and a Christmas Seal plaque for individual service was awarded by Dr. E. A. Meyerding, executive secretary of the Minnesota Public Health Association.

* * *

Early in August, Dr. Wallace Hill, formerly of South Bend, Indiana, arrived in Windom to become an assistant to Dr. L. J. Hoyer in the Hoyer Clinic. Dr. Hill, a graduate of McGill University Medical College in Montreal, Canada, recently completed two years of study in Memorial Hospital, South Bend. Previously he served in the navy for two years. While Dr. Hoyer and his family were on a two-week vacation in August, Dr. Hill conducted the Windom practice.

* * *

A hypodermic injection technique that takes "all the sting out of shots" was described this summer in a letter written to the *Saturday Evening Post* by a patient of Dr. Alma L. Wurdemann of White Bear Lake. The method, not unknown to many physicians, is useful in eliminating the fear that many people have of the hypodermic needle. The injection is preceded by a series of sharp slaps with the left hand on the selected site; then, between slaps, the needle is slipped in with the right hand. Often, then, the injected patient, if he hasn't been watching, looks up and asks, "When you going to shoot me, Doc?"



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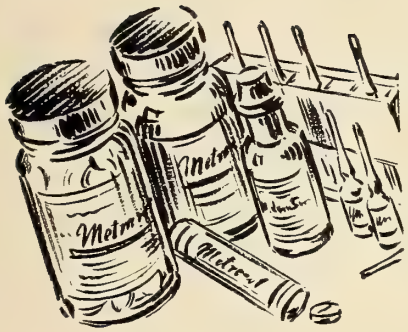
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Announcement has been made of the gift of $13,600,000 by the A. W. Mellon Educational and Charitable Trust to the University of Pittsburgh for a new graduate school of public health to be headed by Dr. Thomas Parran, former Surgeon General of the U. S. Public Health Service. The graduate school will emphasize occupational and industrial health and research in all phases of public health. The school will serve as a postgraduate school for the training of physicians in public health work and for conducting basic research.

* * *

"The Use of Gelatin Foam in Thoracoplasties" was a topic discussed by two Minnesota physicians at the thirty-fifth annual Mississippi Valley Conference on Tuberculosis, meeting with the Mississippi Valley Trudeau Society in St. Louis on September 26. Dr. G. A. Hedberg, superintendent of the Nopeming Sanatorium, and Dr. William D. Seybold, Rochester, described how "gelfoam" delays lung re-expansion in thoracoplasties, permitting rib restoration to take place more satisfactorily.

* * *

Dr. R. H. Monahan, Jr., of the International Falls Clinic, left the city of International Falls on August 20 to begin a three-year fellowship in ophthalmology at the University of Minnesota Hospitals. His practice at the clinic was taken over by Dr. F. H. Walter.

A native of International Falls, Dr. Monahan was graduated from the University of Minnesota Medical School in 1943. During the war he was in the army, serving part of the time as an eye specialist in Fitzsimons General Hospital in Denver, Colorado, and part time as an eye consultant with the army in northern Italy.

* * *

After forty-six years of practice in Red Wing and vicinity, Dr. A. E. Johnson, head of the Red Wing Clinic, retired from active medical practice on August 1. A graduate of Rush Medical College, Chicago, in 1902, Dr. Johnson has devoted his entire medical career to his practice in Red Wing. He has been associated with the Red Wing City Hospital for thirty-five years. Now, seventy-two years of age, Dr. Johnson has purchased a residence in Minneapolis and plans to make his future home there.

* * *

Dr. Oscar Daignault, Benson, who retired from active practice on May 1, was honored by the Benson Chamber of Commerce at a ceremony on August 16. In commemoration of his forty-eight years of service to Benson as physician and civic leader, Dr. Daignault was presented with a bronze plaque citing his achievements.

A graduate in 1898 of the Montreal Medical School, a part of the University of Laval, Dr. Daignault first practiced in Saint Paul, then in Dayton and Hancock. In 1900 he moved to Benson, where he has remained for the last forty-eight years.

* * *

As director of the Commission on Liver Disease of the Army Epidemiological Board, Dr. C. J. Watson, chairman of the Department of Medicine of the University of Minnesota Medical School, journeyed to Germany in September to survey the liver disease re-

search program of the army and to teach and lecture on recent developments in the field. He visited hospitals at Bayreuth, Munich, Mainz, Frankfurt, Nuremberg and Heidelberg. Before returning to Minneapolis late in September he spent several days in London visiting hospitals and laboratories.

* * *

A bronze plaque was recently awarded to W. D. Price, president of the Saint Paul Mercury Indemnity Company, by the National Safety Council for the motion picture film, "Diagnosis: Danger." The film illustrates the hazards in hospitals and stresses accident prevention. It was judged the best non-theatrical film in the occupational safety field during 1947. Don Hawkins, Assistant Secretary of the Saint Paul Company, wrote the script and supervised production of the sound picture. Free bookings may be secured by writing the Safety Engineering Department, Saint Paul Mercury Indemnity Company, 111 West Fifth Street, Saint Paul, Minnesota.

* * *

Angling for radioactive fish in Bikini lagoon, site of atomic bomb tests two years ago, was described early in September by Dr. Asher A. White, clinical assistant professor of medicine at the University of Minnesota. During the past summer Dr. White spent almost a month as medical advisor with a marine biology division conducting a survey of long-range atomic bomb effects. All types of the lagoon's plant and animal life were captured by the research group to be studied for signs of still-present radioactivity. During the war Dr. White was executive officer of the Oak Ridge, Tennessee, hospital and later medical officer in charge of health and welfare at the Hanford, Washington, plutonium plant.

* * *

In late August, Dr. H. B. Roholt left Waverly to begin medical practice in Fosston. Since his graduation from the University of Minnesota Medical School, Dr. Roholt had been associated in practice with his father, Dr. C. L. Roholt, in Waverly. At his new practice in Fosston he is in charge of a twenty-bed hospital, with his offices located in the hospital.

* * *

Forest Lake acquired a new physician on August 26 when Dr. R. A. Knudson, formerly of Chicago, arrived in the city to become associated in practice with Dr. J. A. Poirier. Dr. Knudson has been on the staff of a hospital in Louisville, Kentucky, and has studied at Cook County Hospital in Chicago. He served in the armed forces for two years.

* * *

Chief of staff at the Sister Elizabeth Kenny Institute in Minneapolis is Dr. E. J. Huenekens, former chairman of the Minneapolis emergency poliomyelitis committee during the 1946 epidemic, who was named to the position on August 18. He is a clinical professor of pediatrics at the University of Minnesota.

At the same time it was announced that Dr. Miland



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E. Knapp, clinical associate professor of physical medicine at the University of Minnesota, had been appointed chief of physical medicine in charge of treatment at the institute. It was also stated that Dr. John F. Pohl, former medical supervisor of the institute, would be consulting orthopedic surgeon for the organization. Dr. Pohl is a clinical assistant professor of orthopedic surgery at the University of Minnesota.

HOSPITAL NEWS

Physicians and nurses of the Blue Earth Community Hospital staff met for dinner at the Riverside Town and Country Club on August 20. During the evening program, medical motion pictures were presented, and Dr. George Drexler, Blue Earth, showed a motion picture he had taken while stationed on New Britain during the war.

* * *

The Northern Minnesota Hospital in International Falls was closed on July 24 after nearly forty years of use in the community. The hospital, which was opened in 1909, has been replaced by the new International Falls Memorial Hospital.

* * *

Formerly of St. Cloud, Dr. Stanley Peterson has become resident radiologist on the staff of the St. Olaf Hospital in Austin. He replaces Dr. J. P. Medelman, Saint Paul, who for several years spent one day per week at the hospital as x-ray consultant.

* * *

A committee from Clarkfield, including Dr. M. I. Hauge, met with members of the Minnesota Department of Health in Minneapolis on August 17 to present plans for the Clarkfield hospital project. The plans were accepted with a few alterations, and it was expected that bids for the project would soon be asked.

BLUE SHIELD NEWS

Number of applications received for Blue Shield to August 31, 1948, 80,000
Number of Blue Shield cases paid from August 1 to August 31, 1948, 361. Total for 1948, 1414
Amount paid on Blue Shield cases from August 1 to August 31, 1948, $13,002.63. Total for 1948, $52,577.47

For some months the Minnesota Blue Shield office has been making payments on cases once a week. The policy of making payments on a weekly basis was announced in the Blue Shield article published in the May issue of MINNESOTA MEDICINE. By making weekly payments we are able to give better service to the physician and to the subscriber, and it is also possible for the physician to show the Blue Shield allowance on his monthly statement.

During the last month the Blue Shield office has received an increasing number of claims on which prompt payment could not be made because of the fact that the attending physician's office had returned the forms either not fully completed or with insufficient information. As an example, the hospital discharge date is often omitted; this information is necessary to compute the length of stay in the hospital. Frequently there is no listing of the type of service rendered, particularly in surgical



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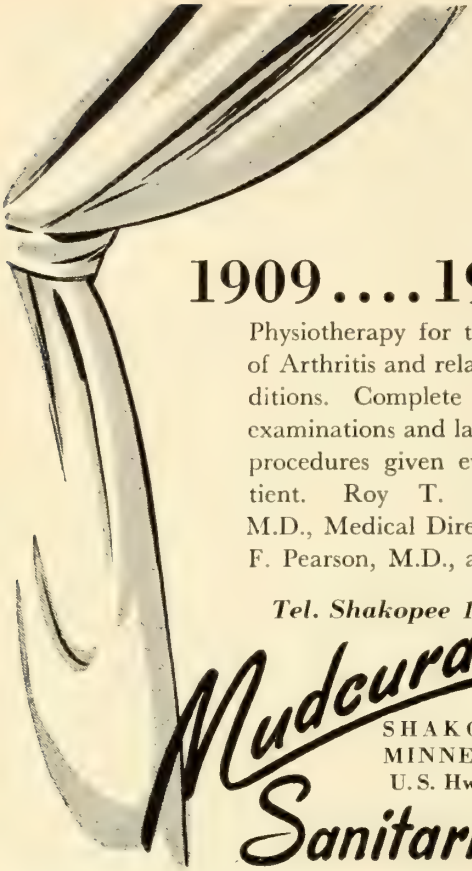
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cases. The diagnosis is given; however, it is difficult to determine if the case is medical or surgical and if surgical what procedure was carried out.

When claims are received with insufficient or incomplete information it is necessary to contact the physician for this additional information. This definitely retards our payment on the case; it means the physician must again check his records and it requires further correspondence by the physician's office as well as the Blue Shield office.

Doctors, you have done very well in completing forms and in giving the necessary information and those of us who work with this information sincerely appreciate your co-operation. In order that Blue Shield allowances can be paid in the shortest possible time and with the least amount of effort please complete the forms so that no correspondence is necessary.

In the event you have some outstanding Blue Shield cases on which you have received Medical Service Report forms, please complete them at your earliest convenience and submit them to the Blue Shield office for payment. Also, if you have rendered a Blue Shield service to a Blue Shield subscriber or dependent and have not received a form from the Blue Shield office, notify the office by letter giving the patient's name, address, group and contract number so that an investigation can be made on that case.

As more and more citizens of Minnesota become Blue Shield subscribers—and more and more are every day—the administrative problems of Blue Shield will increase. Many of these problems will be eliminated if the physicians of Minnesota continue to back their prepaid medical care plan as they have been doing and also if they continue to co-operate in the future as well as they have in the past.

PHI DELTA EPSILON LECTURE

The second annual Phi Delta Epsilon medical lecture will be given at the University of Minnesota medical sciences amphitheater, at 8 P.M., November 3, 1948. The essayist is Franklin Hollander, Ph.D., head of the Gastroenterology Research Laboratory of Mount Sinai Hospital, New York City, on the subject "Studies in Gastric Secretion." The lecture is presented under the combined auspices of the University of Minnesota medical school, the Phi Delta Epsilon undergraduate fraternity and the Minnesota Phi Delta Epsilon graduate club.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE FOOT AND ANKLE; THEIR INJURIES, DISEASES, DEFORMITIES AND DISABILITIES. Philip Lewin, M.D., F.A.C.S., Associate Professor of Bone and Joint Surgery, and Acting Head of Department, Northwestern University Medical School; Professor of Orthopaedic Surgery, Post-Graduate Medical School of Cook County Hospital; Attending Orthopaedic Surgeon, Cook County Hospital; Senior Attending Orthopaedic Surgeon, Michael Reese Hospital; Consulting Orthopaedic Surgeon, Municipal Contagious Disease Hospital, Chicago; formerly Colonel, Medical Corps, AUS. 3rd ed. 847 pages. Illustrated. Philadelphia: Lea & Febiger, 1947. Price, $11.00.

The new edition of this exhaustive work has been revised to cover some of the experience gained in the recent war. In general, the same material is covered as in the preceding editions.

The work offers students and practitioners a comprehensive discussion of the lesions encountered in the lower extremities. The bibliography is extensive.

—S. W. SHIMONEK, M.D.

HANDBOOK OF OPHTHALMOLOGY. Everett L. Goar, A.B., M.D., F.A.C.S. Professor of Ophthalmology, Baylor University College of Medicine, Houston, Texas. 166 pages. Illus. Price $5.50, cloth. St. Louis: C. V. Mosby Co., 1948.

This volume is refreshing in its format, inasmuch as handbooks are usually small and the type likewise small. This book size is royal octavo and the type 11 point, and easy to read. There are 48 text illustrations and 7 color plates, all good.

The author occupies a high standing in this specialty of medicine and is best known to the members of the Academy of Ophthalmology and Otolaryngology for his proficiency in the teaching of Biomicroscopy.

He states in the preface that this treatise was first written as a series of lectures for the junior medical students and adds pertinently that the books then available contained too much material for them to grasp.

The subject matter is brought up to date, and the opinions expressed are authoritative.

The reviewer is impressed with the minimum of verbiage employed to include in such a thoroughgoing manner the basic knowledge of this wide subject.

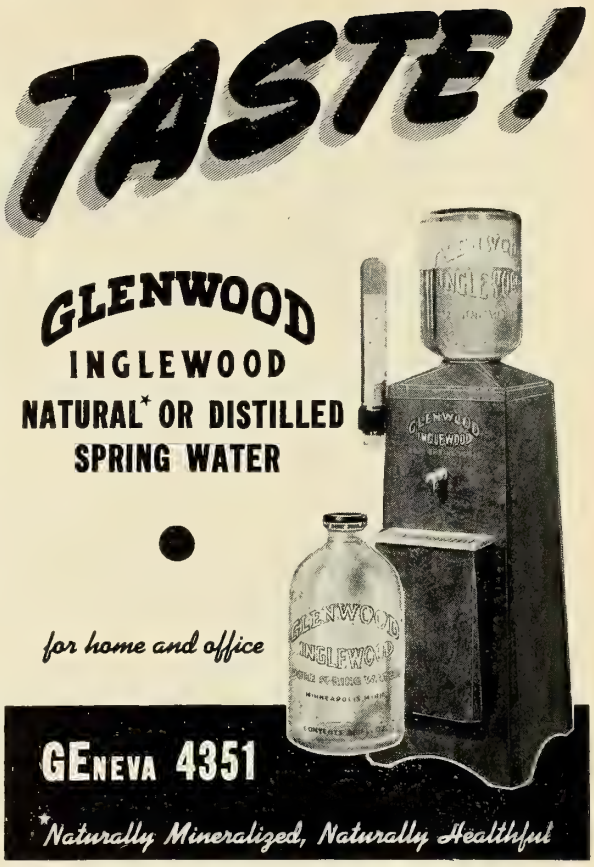
This synopsis of ophthalmology should find an important place in the classrooms and libraries of the junior medical student.

H.J.R.

CLINICAL-PATHOLOGICAL CONFERENCE

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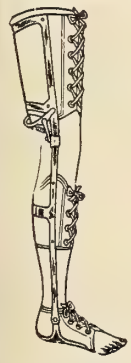
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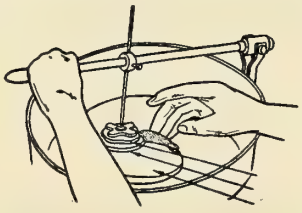
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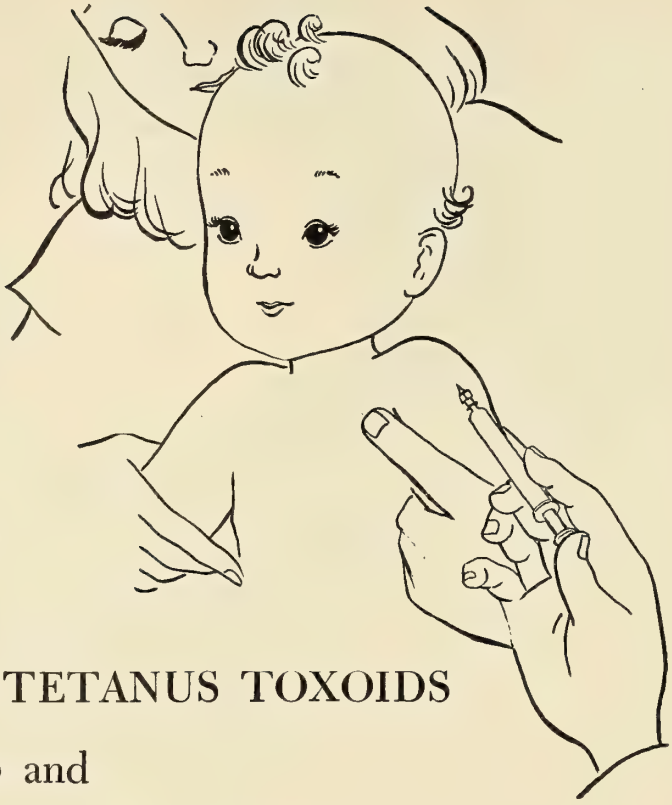
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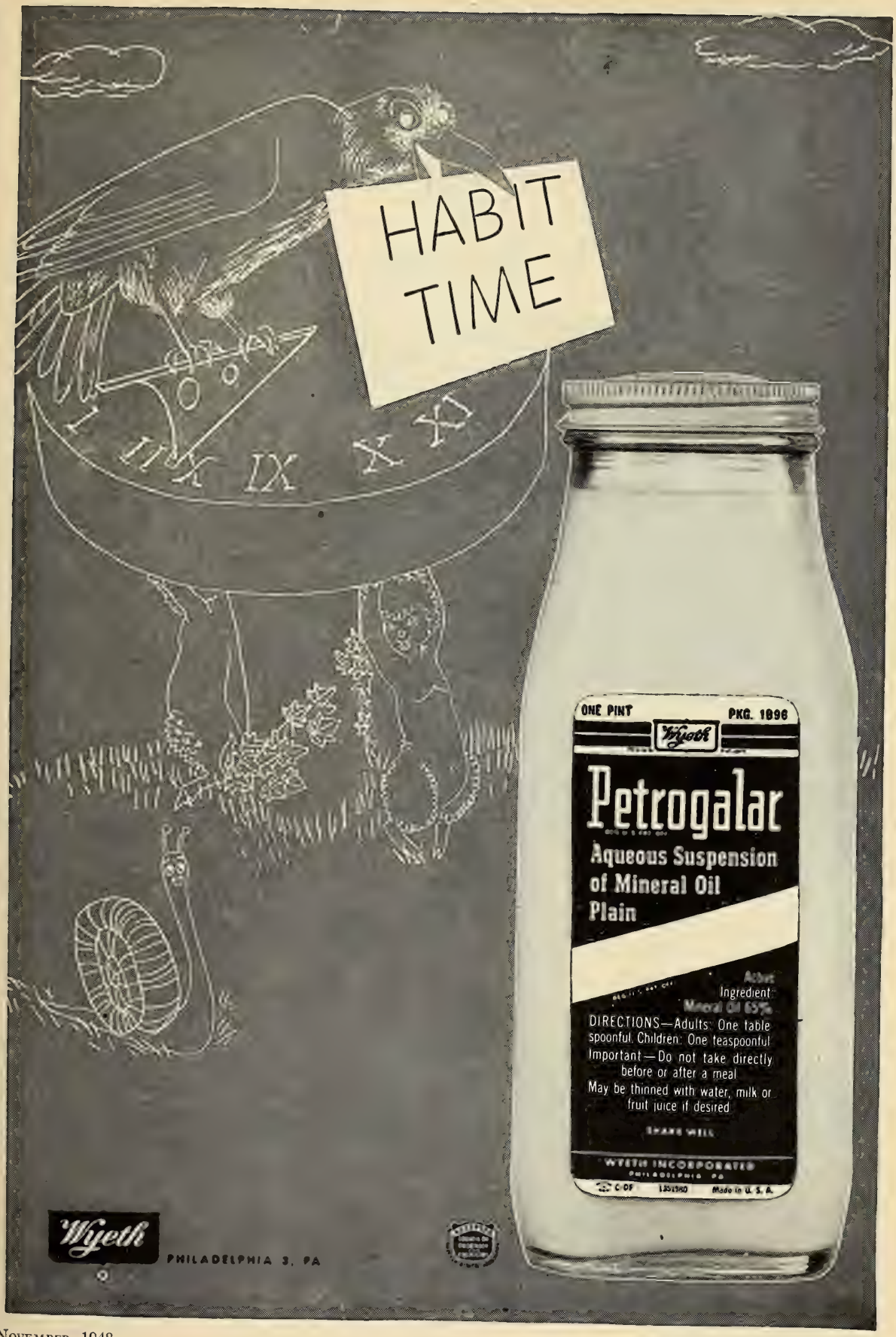
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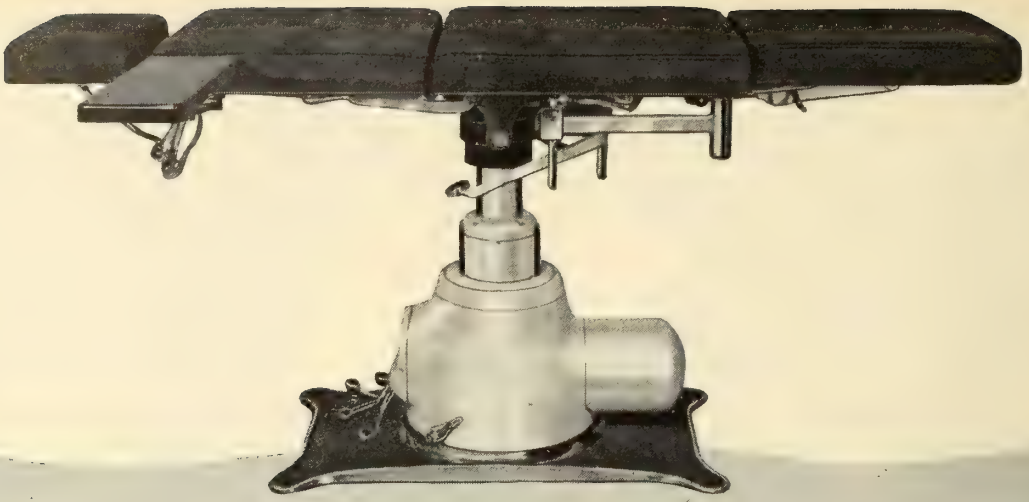
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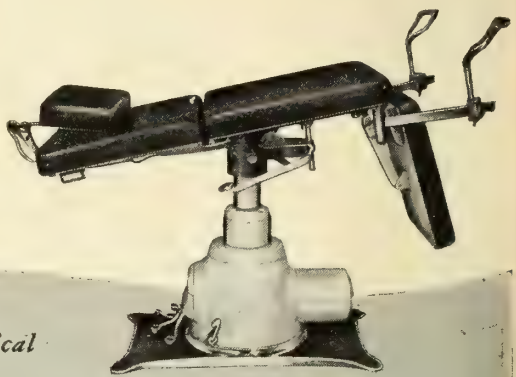


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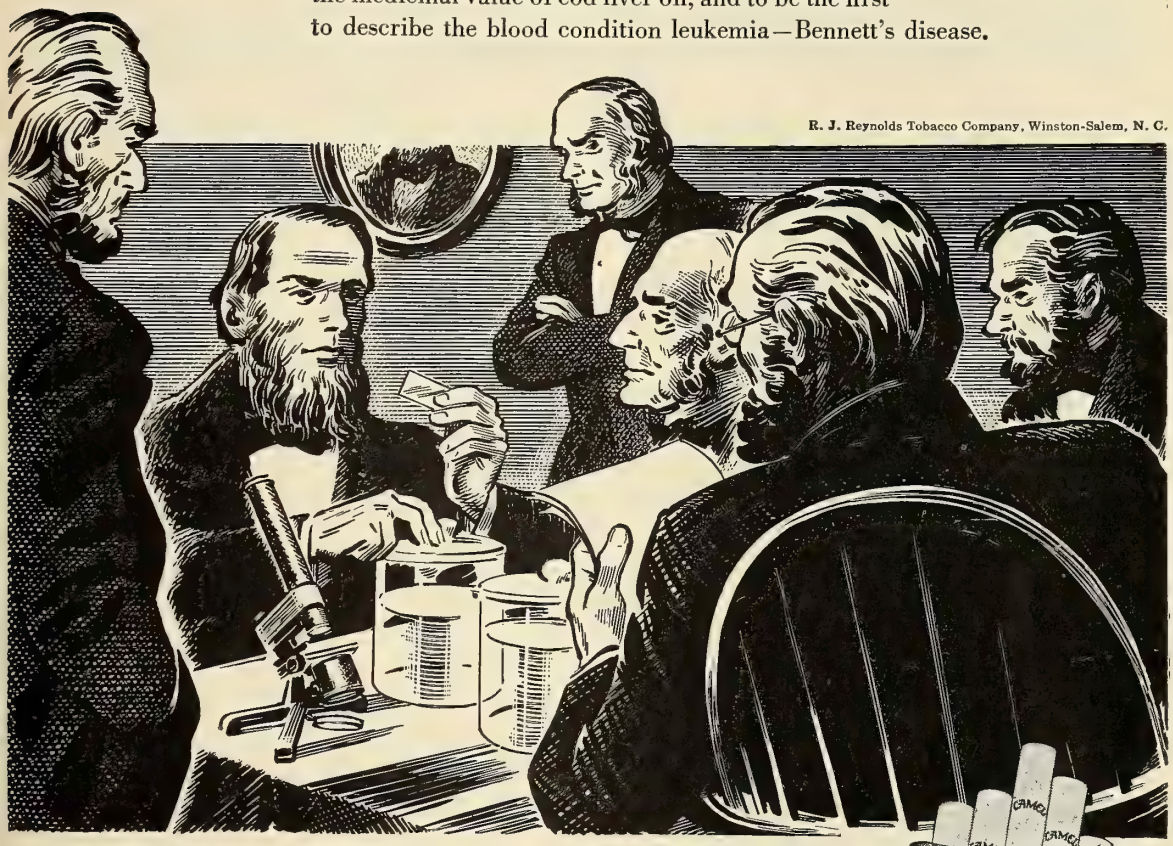
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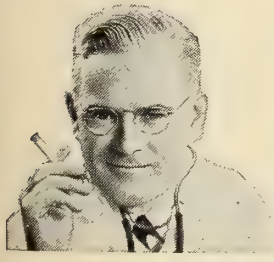
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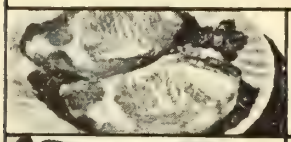
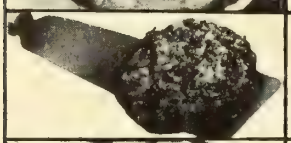
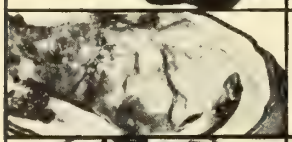
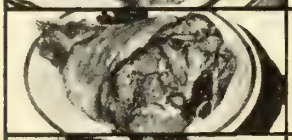
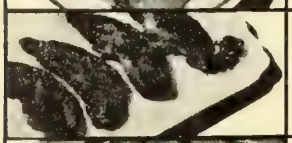
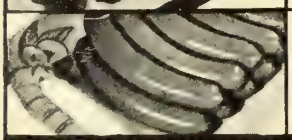
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The Abundant Nutrient Values of MEAT

KIND OF MEAT	COMPLETE PROTEIN	B VITAMINS			FOOD IRON
		THIAMINE (B_1)	RIBOFLAVIN (B_2)	NIACIN	
 PORK	EXCELLENT	EXCELLENT	FAIR	EXCELLENT	EXCELLENT
 BEEF	EXCELLENT	FAIR	EXCELLENT	EXCELLENT	EXCELLENT
 LAMB	EXCELLENT	FAIR	GOOD	EXCELLENT	EXCELLENT
 VEAL	EXCELLENT	GOOD	GOOD	EXCELLENT	EXCELLENT
 VARIETY MEATS (LIVER, HEART, KIDNEY)	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
 SAUSAGE (FRANKFURTERS, BOLOGNA)	EXCELLENT	GOOD	GOOD	GOOD	EXCELLENT

ALL VALUES ARE BASED ON COOKED MEATS . . MEAT ALSO SUPPLIES SIGNIFICANT AMOUNTS OF COPPER AND PHOSPHORUS

While its high content of biologically complete protein ranks meat among man's best protein sources, its contribution of many more indispensable nutrients further enhances its over-all desirability in the daily dietary.

As is readily seen in the chart above, every kind of meat is an excellent source of high quality protein and of iron. Meat further supplies significant amounts of the three B complex vitamins, thiamine, riboflavin and niacin. Certain cuts and kinds of meat are, as a matter of fact, among our richest food sources of thiamine and niacin. All meat, regardless of grade or cut, makes these contributions.

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Pays $	**7,500**	Accidental Death Benefits, $12,500 Double Indemnity.
Pays $	**10,000**	Loss of Hands, Feet or Eyes, $15,000 Double Indemnity or
	5,000	Cash & $400 monthly first 2 years, $300 monthly thereafter. Adjusted benefits for disabilities occuring after age 60.

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- ★ Guaranteed Renewable Features and no Terminating Age.

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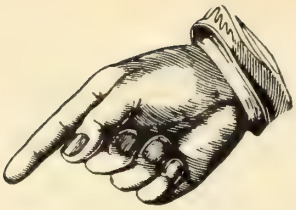
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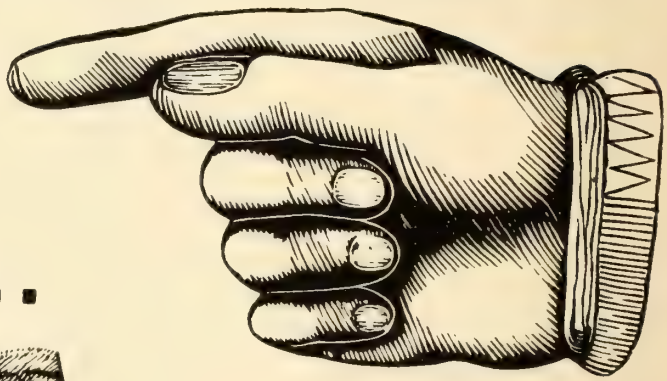
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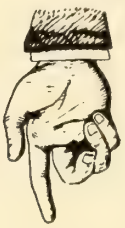
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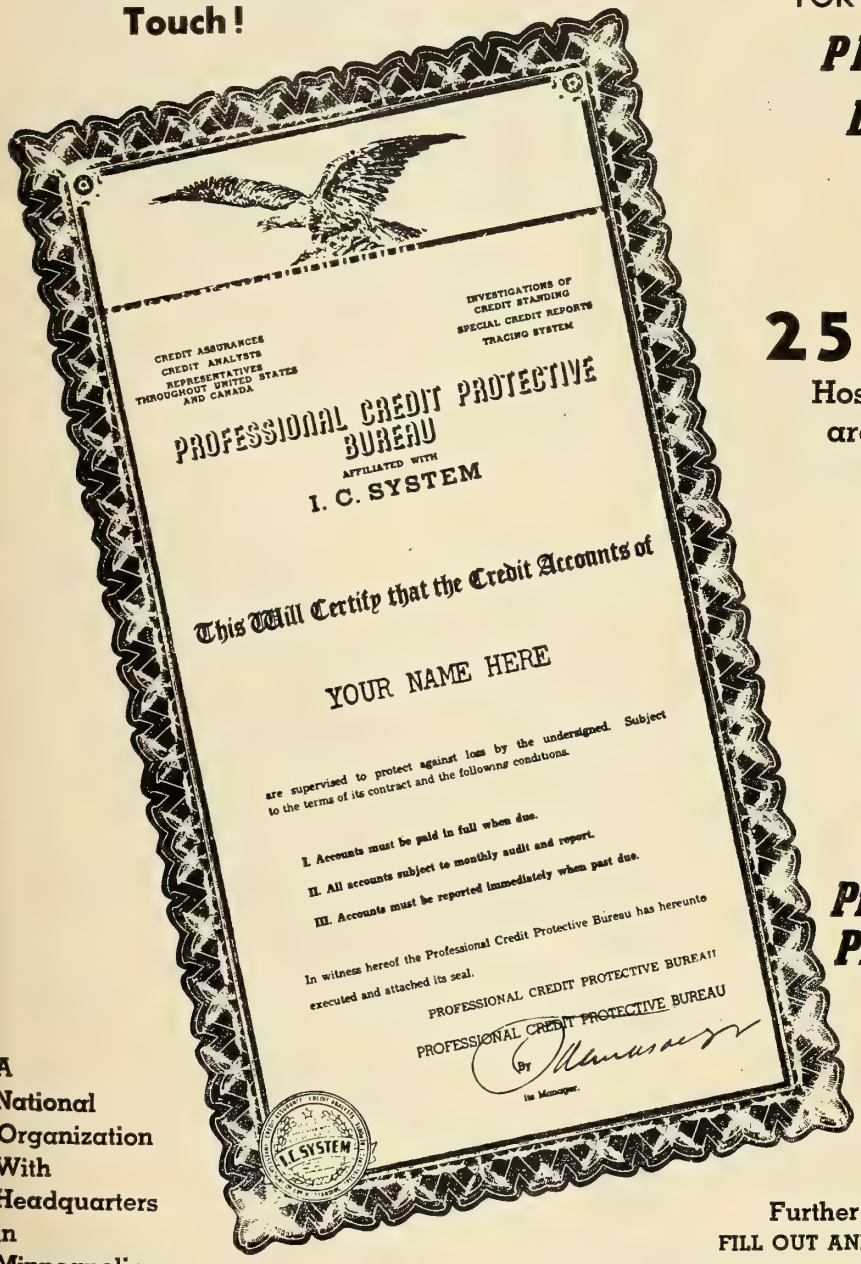
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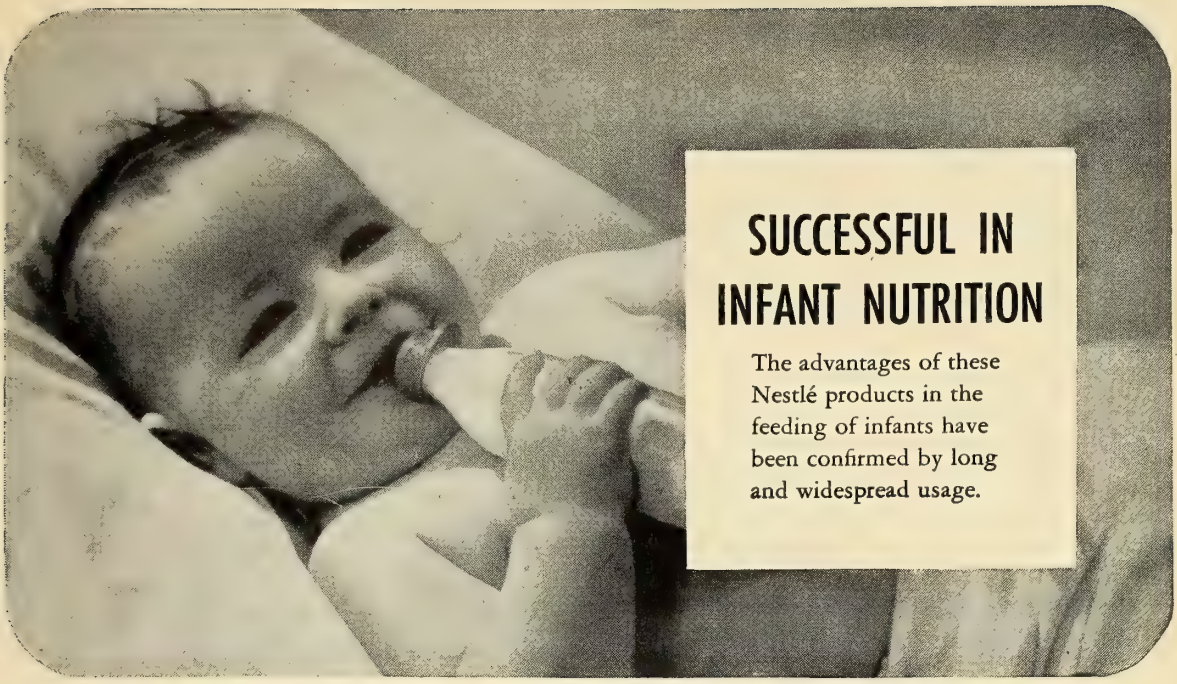
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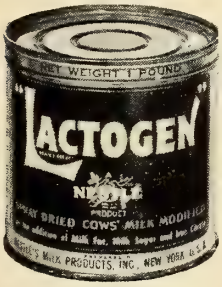
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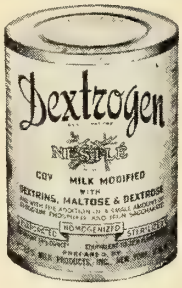
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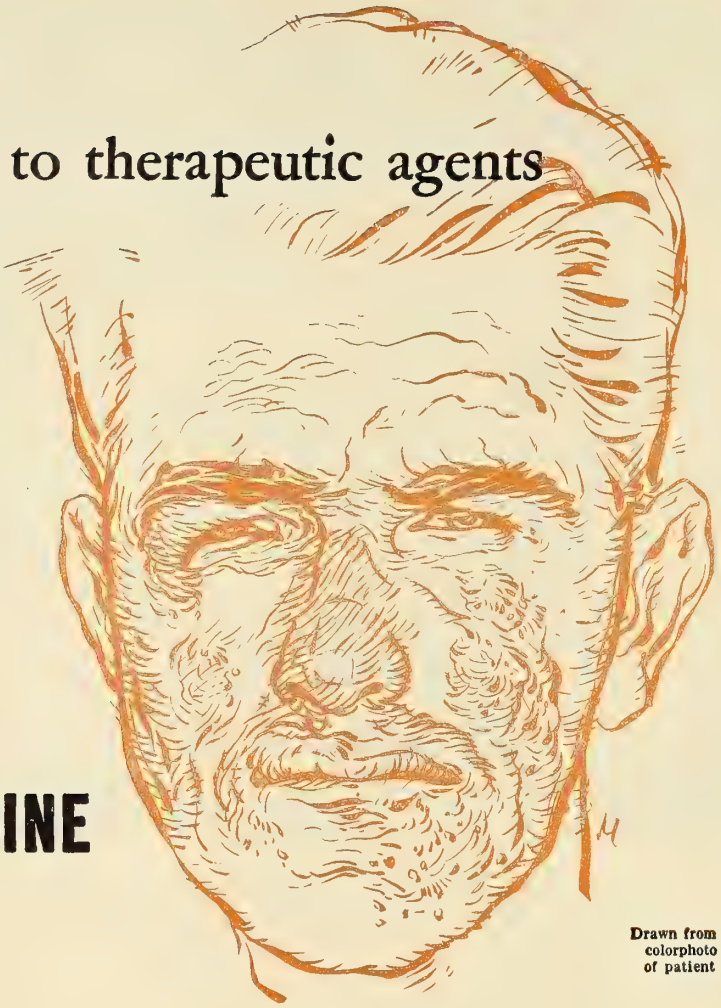
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Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32,241; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. 11, 590-592.

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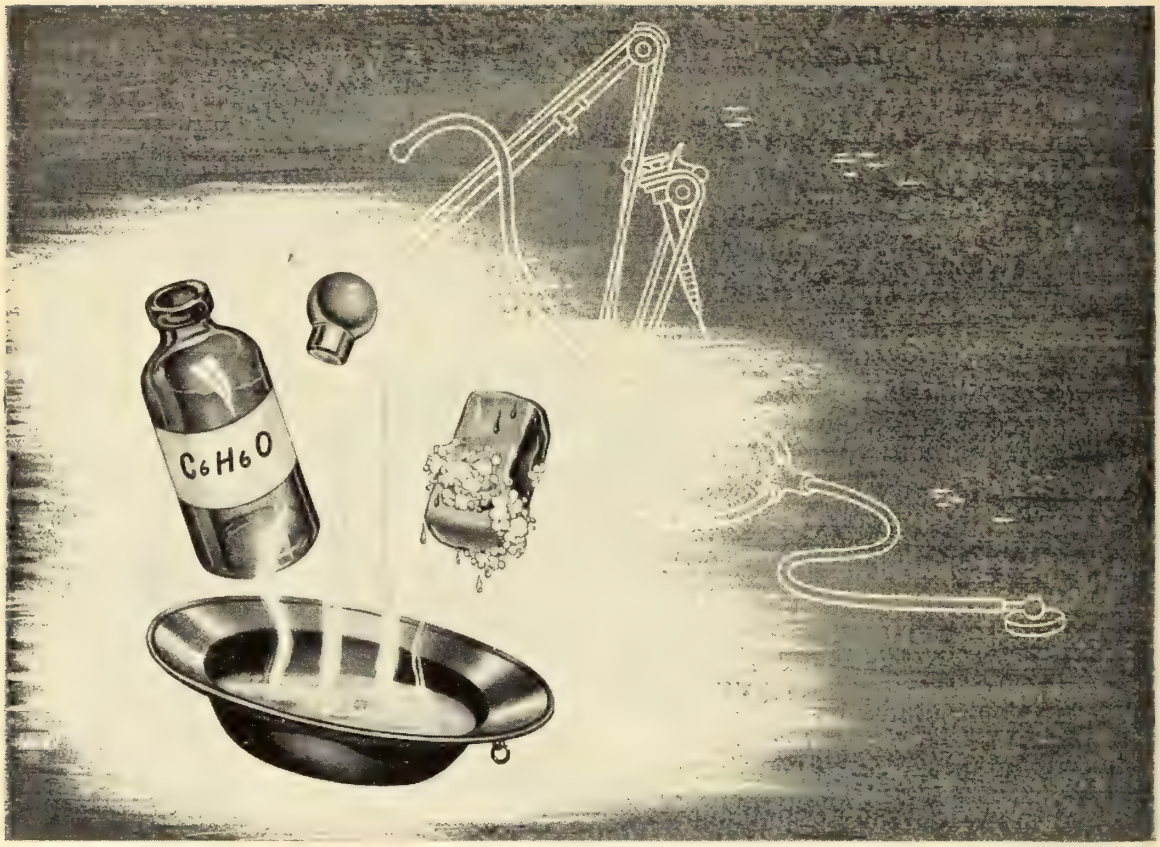
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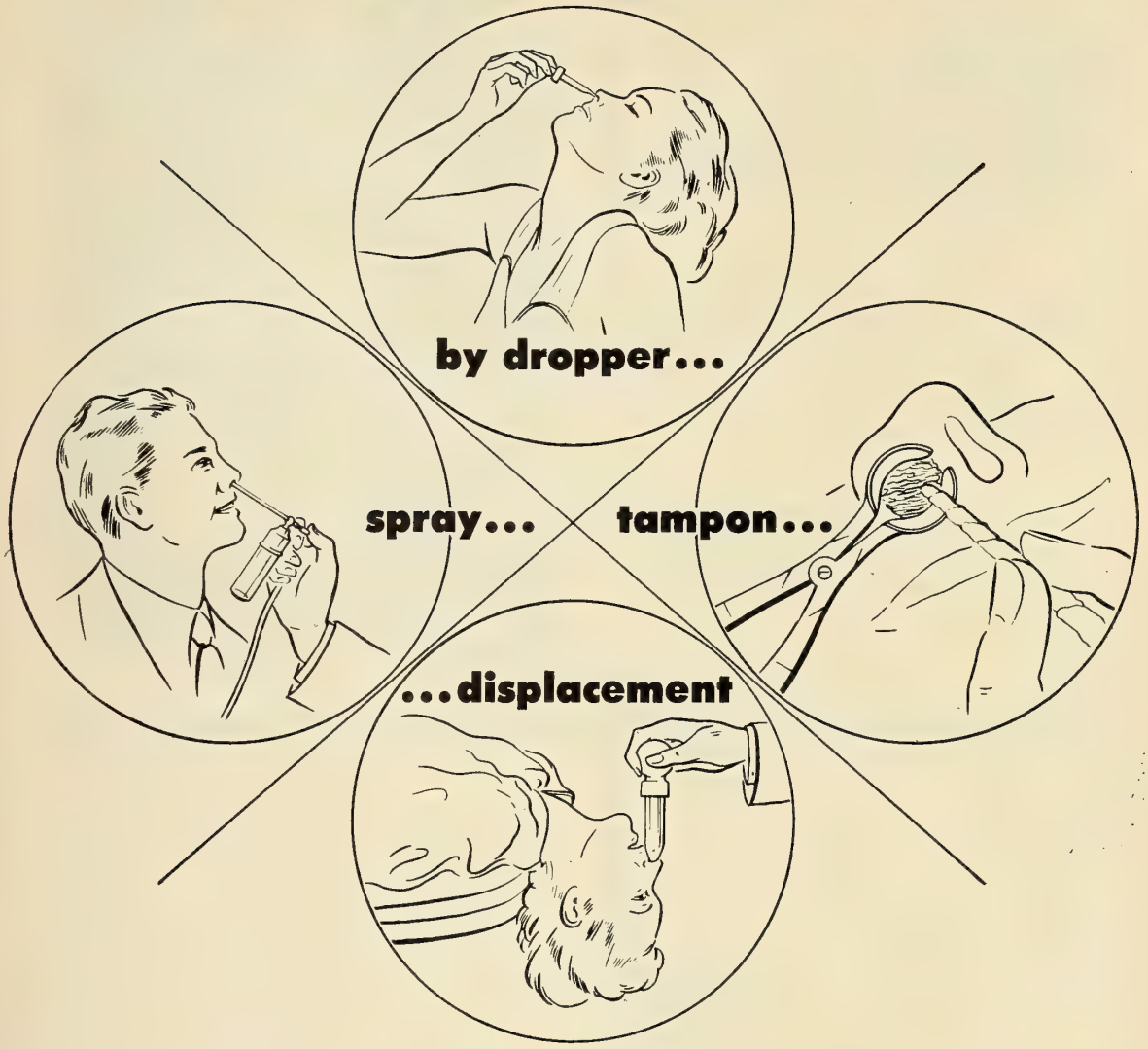


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*Downing, J. G., Hanson, M. C. and Lamb, M.: Use of 5-Nitro-2-Furaldehyde Semicarbazone in Dermatology, J. A. M. A. *133*:299, 1947. • Shipley, E. R. and Dodd, M. C.: Clinical Observations on Furacin Soluble Dressing in the Treatment of Surface Infections, Surg. Gynec. & Obst. *84*:366, 1947. • Miller, J., Rodriquez, J. and Domonkos, A.: Evaluation of Penicillin in Topical Therapy, New York State J. Med. *47*:2316, 1947.

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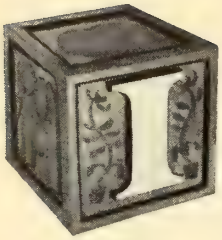
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2. Levine, S. Z.: J. A. M. A., 128:283, May 26, 1945.
3. Schroeder, L. J. et al: J. Nutrition, 32:413, Oct., 1946.

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 November, 1948 No. 11

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MICHAEL L. MASON, M.D., F.A.C.S.

Chicago, Illinois

IT is essential that the surgeon caring for an injured hand know the general principles upon which treatment is based. He should know what he can or should do and what he cannot do. He should recognize that hand injuries are first priority injuries, that the patient cannot be put to bed and cared for in the morning, but must be cared for at the earliest possible moment. He should be guided by the axiom to save all viable tissue and should not feel obligated to perform extensive primary reparative surgery unless he is competent to do so and can anticipate primary healing. He should know that early secondary repair can be accomplished a few weeks after injury in a wound that has healed by first intention with almost as good results as following primary repair. He should keep in mind that secondary operations in wounds that have had disturbed healing are not only very difficult but must often be delayed for many months, entail long sessions of physical therapy, and frequently require multiple operative procedures to obtain often very mediocre results.

There are a few general principles upon which the surgical management of wounds of the hand is based. These principles are all rather interdependent and are premised on a concept of wound care from the standpoint of wound healing.

Primary Healing

Success in the management of wounds of the hand depends upon primary healing of the wound. Disturbances in healing greatly prolong the treatment and increase the disability. A minor infection will prolong the healing time from a normal of seven or ten days to three or four weeks, while a severe infection may prolong the healing many months, may lead to great tissue damage, and may threaten life. If a tendon repair has been done in such a wound, it is certain to be a failure, and secondary repair is not only very difficult but offers slight chance of success.

Asepsis

Strict asepsis must be maintained throughout all the care of the wound. In most wounds the invasive bacteria have been introduced into wounds after, rather than at, the time of injury. A few wounds, such as the human tooth injury, the autopsy knife and the safety pin from an infected case, introduce serious invasive contaminants, but as a rule, serious wound contaminants are introduced secondarily into a wound. In order to prevent this contamination we must know that the most common sources of invasive contaminants are the nose and throat of the patient, the first-aid man, the doctor, the nurse, or fellow patient. Other less frequent but nevertheless important sources are fingers, unsterile dressings and instruments. One source not often taken into account is the dust in wards and dressing rooms, particularly following a vigorous sweeping or the shaking out or folding of sheets and blankets. Shuffling about in operating and emergency rooms stirs up dust which may contain invasive bacteria.

The open wound should be covered as soon as

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possible with a sterile dressing and not uncovered until it can be done under proper conditions, with all spectators, including the patient, masked. It should not be necessary to stress the need for proper sterilization of instruments and dressings which are used in wounds. One point that deserves stressing is the avoidance of touching or dressing wounds with the fingers, since, next to the nose and throat, fingers are the most potent carriers of virulent contaminants. Probing into wounds, even with a sterile probe, before the wound has been cleansed may carry bacteria into it from the surface.

Prevention of Further Trauma: Mechanical, Chemical, or Use

There are many kinds of trauma to which the wound or wounded part may be subjected. Use of the part disturbs healing, but we cannot simply tell the patient to keep the hand quiet. While the wounds may be well cared for as far as dressings and the initial operation are concerned, and all the newer remedies tried on it without success, seldom do we see a hand properly splinted, or even splinted at all. Starting with first aid, and throughout all care until satisfactory healing has taken place, putting the part at rest on a splint is an essential element of the care.

But the wound may be traumatized in other ways. For example, the wound may be filled with irritant chemicals in the hope of sterilizing it. This practice is both useless and harmful.

A wound is traumatized also by the mechanical act of operating upon it, and it is only by strict attention to operative technique that the surgeon can keep his operating trauma down to a minimum. Forceful retraction of tissues because of inadequate exposure is one of the most frequent sources of operative trauma. Tissues may be crushed in heavy forceps when they should be handled with the greatest gentleness to avoid irritating them. Very minimal operative trauma to tendons may lead to almost complete functional loss due to adhesions.

Early Care

Every wound of the hand should be cared for at the earliest possible moment.

Early care starts with first aid. Three very simple indications are to be met, and little elaborate equipment is needed. They are (1) to stop bleeding, (2) to cover the wound at once with a sterile dressing, and (3) to immobilize the hand. Practically all bleeding from wounds of the hand can be controlled by the pressure dressing and elevation. In a very few cases it will be necessary to apply a tourniquet. Too much emphasis has been placed in first-aid manuals on the tourniquet, which is often applied just tightly enough to cause venous congestion and increase the hemorrhage. The dressing should be large, not so that it simply will cover the wound, but to apply uniform resilient pressure over the whole wounded hand and lower forearm, to control hemorrhage and to help control the edema which is sure to occur. A large dressing tends to splint the hand and so helps to meet the third requirement of first aid, namely, to put the part at rest.

The injured hand should be splinted at once whether or not fractures are present, not only because the patient is much more comfortable, but because further injury is prevented thereby.

Once the patient reaches the doctor's office or the emergency room of the hospital he should receive care at the earliest possible moment. An open wound of the hand cannot be allowed to remain untreated overnight and added to the morning schedule. It is to be remembered that the usually accepted time limit for primary closure of wounds is six to eight hours, and for primary nerve and tendon repair is four hours, and that these limits, particularly the limits on nerve and tendon repair, are much shorter in some types of wounds. The longer the delay, the more likely the establishment of infection and increase of necrosis with resultant anerobic and aerobic saprophytic infestation.

Accurate Diagnosis

Accurate diagnosis of extent and nature of the injury is essential.

The surgeon should attempt to assess the full extent of the damage at the time the patient is first seen. The examination of the wound itself should be brief, and accomplished with patient and all examiners masked to avoid droplet contamination of the wound. Nerve and tendon damage can be diagnosed by examining for function of the various structures, and for this a few very simple tests are enough to indicate whether the median, ulnar or radial nerves or their branches have been divided. Tendon division can be detected by asking the patient to flex and extend

the different joints of the fingers and thumb and to move the wrist. For these tests it is usually not necessary to uncover the wound itself. The wound is uncovered briefly so that the surgeon can see where it is and know if some type of skin graft will be needed. An x-ray will always tell whether there has been a fracture.

A careful history of the wound from the time of its inception to the time the patient is received in the hospital is essential for intelligent care. When was the wound received? Here we are interested in the number of hours which have passed since the injury, and since an hour or two may determine whether or not we can perform primary closure, this information should be exact. What was the nature of the first-aid care? Have secondary contaminants been introduced into the wound by onlookers or others? Was the wound covered over at once or was it exposed for some time before being dressed? Was it covered with a sterile dressing or was an unclean cloth put over it? What was the nature of the injury itself? Was it due to a relatively clean object or to one which may have carried invasive organisms into the wound with it? What has been done with the wound since it was given first-aid care? Has it been probed or fingered? Has it been frequently uncovered and examined under doubtful conditions of asepsis? Have attempts been made to suture nerves and tendons in office or emergency room? All of the information thus gained will be of value to the surgeon in deciding on the manner in which he will treat the wound.

Has the patient other wounds which may require priority care? These wounds may be of such a nature that they endanger life, and the hand wound must either wait until they have been cared for, or extensive repairs must be foregone and planned on as secondary repairs at a later date.

The general condition of the patient should receive attention. Ordinarily, the patient with a wound of the hand only will not be in shock, but if other wounds are present, shock may develop and must be treated before the hand can be operated upon. If so, the necessary delay may change the surgeon's plan of procedure. Heart and lungs, blood and urine should be examined and the findings recorded. A wise precaution also is to ask the patient when he had his last meal. Hand wounds of any severity must usually be operated upon under a general anesthetic, and it is wise to empty a full stomach.

Surgically Clean Wound

The contaminated wound should be converted into a surgically clean wound.

A wound seen within a few hours can be converted into a clean wound at once; nerves and tendons can often be repaired and the wound can be closed primarily. If over four hours have elapsed, we can still cleanse the wound and, with proper excision, can close it. After eight hours have elapsed, it is unsafe to close most wounds, although we can perform a thorough cleansing and get it ready for secondary closure. If days have elapsed and severe secondary infection is present, the cleansing of the wound, the removal of necrotic tissue and the other steps making the wound ready for closure are much prolonged and may take weeks or months.

We do not pretend to get any wound bacteria-free. We hope, however, to remove from it the majority of the virulent invasive bacteria before they have had chance to multiply and invade. The tissues will usually take care of those left behind if we leave them in proper condition to do so. Chemicals and antibiotics will not compensate for carelessness in our cleansing of the wound.

Removal of wound contaminants and soiling may be accomplished either by excising all the contaminated tissue or by washing contaminants out. While wound excision would seem to be the ideal method of cleansing a wound, the surgeon seldom encounters a wound in which excision is at all feasible. A much simpler and more efficacious method of accomplishing the cleansing is available in simple soap and water washing of the wounds. This is a procedure which is applicable to all wounds and has been proven effective. The washing is done in a purposeful manner and is not just a matter of painting about the wound with soap and water. Each new group of residents, interns and clerks must be instructed carefully in the matter of washing wounds, and even after they have observed the technique several times, they still require supervision. The surgeon goes after it as if he really meant it. First covering up the wound with sterile dressings to protect it from the wash

water of the skin, he washes the surrounding skin for a full ten minutes, putting both thought and elbow grease into it. This washing is done with ordinary bar soap and sterile water, with soft cotton squares, not brushes, and for this reason we like to refer to the cleansing as washing and not as scrubbing, since that term connotes the use of a brush. The skin is rinsed, and the surgeon changes his rubber gloves and with another scrub set proceeds to wash out the wound itself with a generous amount of soap and water. After a full ten minutes of washing, the wound is rinsed with a large amount of sterile normal saline solution and is ready for draping.

Excision of Devitalized Tissues

Excision promotes healing by removing tissue which is destined to become necrotic. It is the removal not so much of bacteria as it is of bacterial food. Dead and devitalized tissue must be removed from the wound, if not at the time of primary care, then later either by the body tissues themselves or by bacterial decomposition. Surgeons are realizing more and more that the reason many wounds go "foul" is not simply because of the presence of virulent bacteria, but because of the presence of pabulum for organisms not primarily virulent but which thrive on products of tissue decomposition. Chemotherapeutic agents and the antibiotics will not take care of dead and dying tissue, and their use will not prevent the development of infection if nonviable tissue is left behind.

Wound excision need not be wide and radical; the surgeon is not attempting to remove the whole wound surface, only tissue destined to die. In the case of certain tissues, such as muscle and fat, the surgeon can be rather liberal; in case of tissue such as tendon, nerve and bone, he must be very conservative and remove only what is certainly destroyed or nonviable. Skin must not be needlessly sacrificed, but the surgeon should not leave avascular flaps to become gangrenous.

How are we to recognize devitalized tissues? Ordinarily, skin which is white, grey or purple is destined to succumb. Skin which looks like third degree burn skin is hopelessly injured. We can get some idea as to skin viability by considering the type of injury which has occurred. Clean-cutting wounds or sharply lacerated wounds will not produce much skin damage, while wounds due to severe crushes, abrasions and explosives must be very carefully considered since the skin may be so badly damaged that it cannot live. Wounds due to heavy weights falling on the part, even though the skin may look healthy at the start, are very productive of necrosis not only of the skin but of the deeper tissues as well. Gunshot wounds may not cause much damage to the skin even though the deeper tissues may be badly disrupted, and excision of a very narrow strip (a few millimeters) is sufficient. In the palm of the hand the surgeon must be very careful in his evaluation of the skin in case of injuries due to heavy weights falling on the hands, wounds due to machinery or other heavy objects moving across the palm, or falls in which the patient has slid for a distance on his palm. In such cases the epidermis will be seen to be lifted away from the underlying dermis, and the latter will have been torn and crushed severely without any external evidence of it. One or two days later, if the hand is examined, the thick epidermis will be found to be lifted up by a hemorrhage, and when this is removed a necrotic dermis will be found. These areas of skin damage must be excised at the start.

Flaps with pedicles distally are not likely to live unless they are very small. Flaps with pedicles proximally will usually survive if they are treated with a resilient pressure dressing to prevent congestion. The surgeon can gain some idea as to viability of flaps if he watches the return of circulation into them during the phase of active hyperemia after the blood pressure cuff has been released. Two things are to be watched for: a return of circulation as evidenced by reddening of the skin, and venous congestion as evidenced by a purple coloration. Skin which remains white following release of the cuff is avascular. The surgeon must wait a few minutes before making this decision since the circulation does not return at the same rate in all areas of the skin. Areas originally white will often show a slow return of reddish blush and finally come back satisfactorily. Skin which is dark and purplish after the initial blush may not be hopeless but may survive if the veins are properly supported by a compression dressing, and the surgeon can get some idea as to this by maintaining gentle pressure on the questionably viable skin for a few moments and watching its behavior. If under gentle pressure, which supports the venous return, the skin is pink and normal appearing, the surgeon can assume that

if this same resilient pressure is exerted by the postoperative dressings, the skin will survive.

Nonviable muscle is usually grey or greyish red; it does not contract and does not bleed. Here, again, the history of the injury is valuable, since with severe crushing wounds, muscle is likely to be devitalized. The surgeon can be fairly liberal in muscle excision if in doubt.



Fig. 1. Primary repair of extensor pollicis longus tendon. Wound was seen within one and a-half hours, cleansed with soap and water, irrigated with normal saline solution. Thumb was splinted in abduction and extension for five weeks following surgery. Primary healing. Result at end of seventh week.

Bone should be conserved if viable. Any bone fragments still attached to periosteum should be considered viable, but loose fragments should be removed.

Tendon should be submitted to a minimal excision. Ordinarily, only if severely crushed and shredded, should it be excised. Certainly the clean cut ends of tendons in sharply lacerated wounds can usually be left alone. Over the dorsum of the hand in crushing wounds, the extensor tendons are likely to be badly torn and frayed, but even here any healthy looking shreds should be saved if they can be used to conserve continuity. Nerve, likewise, should not be excised. Nerve is remarkably viable even if it is badly frayed.

Extent of Primary Repair

The extent of primary repair permissible in the open wound should be determined.

After the surgeon has properly cleansed the wound and has excised nonviable tissues, he should decide on the amount of surgical repair to be done. To reach this decision he must ask himself several questions. The first is: Can primary healing of the wound be expected? If the wound can be expected to heal by primary intention, extensive nerve and tendon repair may be done; if such healing cannot be anticipated, then deep repair must be postponed until a later date, and undertaken as a secondary operation under more favorable conditions.

The decision to perform deep repair will depend also on the nature of the wound itself. Sharply cut wounds, such as are produced by broken glass, knives, tin cans, et cetera, do not cause a great amount of tissue damage beyond the actual tissue division. On the other hand, some lacerated wounds due to heavy jagged edges of stones, punch presses, et cetera, cause considerable damage to the edge of the wound; the divided structures are likely to be macerated and torn, the tissues disrupted and often avulsed. In wounds of this type a fair amount of excision will be required to remove the nonviable tissues, and those viable tissues left are often far from normal and may not be suitable for primary repair. In wounds of this nature, the surgeon should usually refrain from immediate nerve and tendon repair.

Crushing injuries and wounds associated with compound fractures and joint injuries, and wounds with such loss of covering tissues as to require skin grafts for closure are not suitable for tendon repair. A tendon sutured over the site of a compound fracture is certain to become densely adherent to the bone callus and a secondary operation will undoubtedly be required.

Can the wound be completely closed with a satisfactory layer of skin and subcutaneous tissue over the site of nerve and tendon repair? If the wound cannot be closed because of the probability of serious contamination, or because it has been received too late to permit closure, nerve and ten-

don repair are out of the question. If it is necessary to use some type of graft to close the wound, nerve and tendon repair are also precluded unless the grafts are laid on some spot away from the actual site of suture. While split grafts will take over bone and tendon if there is a thin layer of areolar tissue between them and the graft, we cannot place grafts over a sutured tendon or over the site of nerve suture, or over bare bone with any chance of success. Occasionally it is possible to shift a flap of skin in such a way as to cover the site of a tendon repair and to cover the defect left by shifting of skin with a split graft.

There are several other general considerations which should go through the surgeon's mind when he attempts to decide on the extent to which a wound should be repaired as a primary procedure.

He should have adequate assistance if extensive repairs are to be undertaken. Without skilled help, the man who tries to repair a number of tendons in the wrist or fingers, or to close a complicated wound after delicate deep repair, finds himself in more and more difficulty. A competent anesthetist is needed to carry the patient through a long operation with safety, since these operations can seldom be done under local anesthesia.

The surgeon must not be rushed but must take all the time needed to finish a long and difficult task. If he is not willing to take all the time needed to do the job correctly, then both he and the patient are better off if the repair be skipped and a secondary repair done later under less trying circumstances.

The surgeon should know how to perform the technical steps necessary to repair nerve and tendon. If not, he should not attempt them, but simply close the wound, since an incorrect technical repair is not only bound to be unsuccessful but also makes the secondary operation very much more difficult, if not impossible.

The surgeon who does nerve and tendon repair should be acquainted with the proper after-care for these operations. He should know how to splint the hand, how long to leave the splint on, and how to start motion in different types of tendon repair and for support of the small muscles paralyzed by nerve division. He should be willing to watch the patient through the long months often necessary for recovery and know how to judge the course of recovery. While many of these considerations may not loom very large when the case presents itself and in the first few weeks after operation, they become increasingly important as time wears on—particularly important if too early use leads to separation of a tendon which had been moving a finger quite well until a slight force was exerted—important if the question of nerve regeneration leads to doubt as to whether or not a proper suture had been performed.

A few specific considerations may be discussed as to primary tendon, nerve and bone repair.

Time since injury is a most important consideration in determining whether or not to perform a tendon suture. It may be taken as a strict rule never to do a primary suture of tendons in wounds over four hours old, and this upper limit is to be taken only in clean-cut incised wounds. In the case of tendons divided in the digital sheaths, the absolute upper limit within which it is permissible to perform a primary suture is two hours, and then only in cleanly cut wounds, e.g., test tube or burette lacerations, milk bottle cuts, et cetera. Where these time limits are overstepped, the general wound therapy is carried out, closure is accomplished if indicated, and the tendon repair postponed until a later date.

Where primary tendon repair is indicated, all tendons are carefully sutured individually. Where the profundus and sublimis tendons have been cut within the finger (usually at the base of the proximal phalanx), only the profundus is sutured and the sublimis slips are excised. If both tendons are repaired, there are produced three tendon calluses which become adherent to each other, and to the phalanges as well, so that poor or no function results. When suture is accomplished in the fingers, it is essential to excise a window from the fibrous sheath overlying the site of repair so that the healing tendon lies in contact with soft well-vascularized subcutaneous tissue from which it can obtain a good blood supply during its healing period. If the blood supply is obtained from the fibrous tendon sheath, the healing tendon will become adherent to dense fibrous tissue.

There are a number of methods devised for the suturing of tendons. As long as they follow certain principles they will be successful. To secure end-to-end union, the tendon ends should be opposed accurately, and no foreign matter, suture

or blood clot should lie between them. The opposed ends of the tendon, which are playing a very important part in the process of repair, should be as free of suture material as possible so as to leave the proliferating ends free. In very occasional cases a side-to-side suture of tendon may be done, but not often without the danger of producing shortening and a bulbous adherent line of union. Hence, an end-to-end suture is most often used.

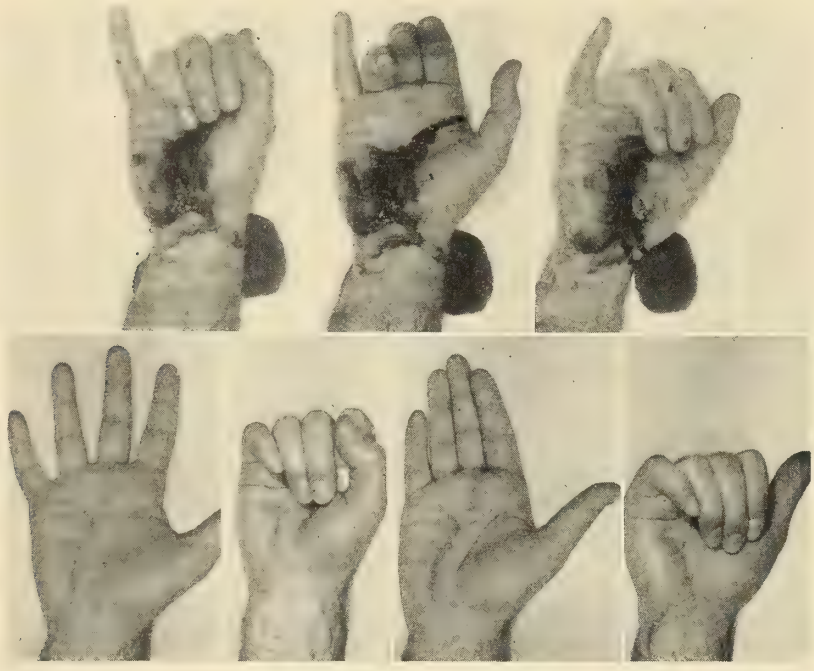


Fig. 2. Primary repair of flexor tendons of fifth finger and of sensory branches of ulnar nerve two hours after injury. It was necessary to enlarge the wound in the palm by a curved distal incision, and to prolong the proximal end of the wound across the wrist by a curving incision toward the ulnar side. Primary healing. Splinted to relax the sutured nerve and tendons for three and a half weeks. Result at end of two months.

Just as there are various methods used to secure tendon suture, so there are various materials used for sutures. As requisites for tendon suture material we may specify fine diameter, tensile strength of about 4 to 5 pounds, and relative nonirritability in the tissues. Catgut, although occasionally used by the general surgeon who attempts a tendon suture, has been given up by men who have had experience with this type of work. The three materials which are most used today are silk, cotton and stainless steel wire. These three are all practically nonirritant to the tendon and possess very satisfactory tensile strength in their finer grades. My own preference is for silk of the untreated variety, since I feel that any substance added to silk is very likely to be irritant. Silk is preferable to cotton, since it seems to me to be somewhat smaller, strength for strength, than cotton, and there seems to be very little difference in irritant properties between the two. Steel is a bit difficult to handle, and there is always the danger of puncturing the gloves. It seems to be the least irritant of the three, but to my mind this quality is overweighed by the difficulties of handling.

The technique of suture which has proved successful in our hands is one in which the suture pulls transversely across the tendon, and then turning at a right angle across the knot of another suture, pulls in the long axis of the tendon. These appositional sutures are paired, two being introduced into each of the stumps about 1.5 cm. from the cut end, and are tied to each other on the outside of the tendon. The ends are then accurately opposed by means of several very fine silk sutures which pass through the sheath only.

It is important in repairing tendons to leave retaining ligaments sufficiently intact to prevent bow stringing. The transverse carpal ligament, if it has been divided, should be repaired at the

end of the operation. While doing the repair of tendons in the fingers, it has been advised to cut out a window in the sheath. This window does not destroy the retaining apparatus of the finger tendons but leaves the sheaths intact above and below, and bowstringing does not take place. To be avoided is the complete division of the fibrous tendon sheath in the finger since if this is done, the repaired tendon will pull forwards and a serious functional disturbance will follow.

A few specific details of indications and technique apply to the problem of nerve suture. As far as the time interval between injury and repair is concerned, it is my feeling that nerves may be safely sutured up to the time limit within which the wound may be closed. If the wound is seen too late to permit primary closure, then it is probably not wise to attempt nerve repair, although it may be permissible to place a single suture through the perineurium of the two ends and to bring them together loosely to prevent separation.

There is some discussion today as to the advisability of performing primary nerve repair at all. Some surgeons believe that because of the softness of the freshly divided nerve ends and the great difficulties experienced in performing a primary suture, it is much better to wait until the wound has healed and to perform a secondary suture by choice. At the time of secondary repair the ends will be found to be slightly fibrosed and more easily handled; it will be possible at that time to determine the extent of nerve damage by slicing the nerve stumps until normal cross sections are obtained. It is pointed out that at first it is not always easy to determine the extent of nerve damage because of the disruption by the injury. At time of secondary repair it is said, however, the extent of damage can be accurately determined. I cannot agree with this position, granting the greater technical ease of secondary repair. Restoration of continuity at the time of primary operation offers the best chances for nerve regeneration and avoidance of trophic changes which are sure to occur if the ends are not united. If nerve suture is permissible, primary suture is the procedure of choice.

Recognition of nerves in the primary wound may be difficult because of the suffusion of blood into and about them. The surgeon will save time if he goes above and below the site of injury to seek for the nerve in normal tissues and under normal relations, and then traces it to the site of the wound. Nerve should not be confused with tendon if a few distinguishing characteristics are kept in mind. The vascularity of nerve gives the clue to its identity, for whereas tendon is white and glistening and almost homogeneous on first glance, nerve is pink and striated, and soft. Often a vessel can be seen coursing over the surface of the nerve. In case of the median nerve this is invariably present and may be a very sizable artery.

Hemostasis in case of nerves must be perfect, since if a clot comes between the ends, it forms an almost certain barrier to the downgrowth of axones.

The opposition of the nerve ends must be perfect so as to leave no gap which will fill up with clots and serum. The ends must match as closely as possible so that corresponding nerve bundles are opposed. This is not always easy in wounds in which there has been great disruption of tissues, and the nerve ends have been dislocated. In clean-cut wounds, however, the surgeon can often orient the nerves by placing a fine silk suture through the perineurium of each stump before mobilizing it, marking corresponding points on each stump. Some clue as to matching bundles is gained from an inspection of the cut ends. Where there has been a large gap between the stumps, the bundles may no longer correspond, and in such instances the best guide to correct alignment is to place the nerve in its anatomic position and see how "it wants to lie" and suture it in that alignment.

It should not be necessary to caution gentleness in handling the nerve ends, to avoid crushing them or grasping them in forceps. Suturing should be done with the finest of silk. We prefer 7-0 ophthalmic silk swaged on very fine needles. The sutures must pass only through the perineurium and *not* through the substance of the nerve. A number of sutures are necessary: eight to twelve on a median or ulnar nerve, three to four on a digital nerve.

The suture line must be placed in a position where it is not involved in scar or becomes attached to callus or healing tendons. It is usually possible to place the sutured nerve in a bed of fat or muscle.

There is still some discussion as to the need

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THE MANAGEMENT OF VASOMOTOR RHINITIS

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PATIENTS with vasomotor rhinitis present a vexing problem which not infrequently is difficult to solve. The reasons for the trouble in the management of this condition lie for the most part in the fact that this disease is, as yet, incompletely understood. In all probability, vasomotor rhinitis represents a group of conditions which have similar symptoms. Although in a broad interpretation, vasomotor rhinitis is included in the group of allergic diseases, many factors not directly resulting from hypersensitivity may be of major importance in its causation. In vasomotor rhinitis in which contact with allergens is of most importance, nonallergic factors play secondary but nevertheless important roles. At times, vasomotor rhinitis appears to arise solely from factors present within the body.

Although uncomplicated vasomotor rhinitis is not a serious disease, the problems of social adjustment which sufferers from it present may make the disability a major one. Diseases secondary to vasomotor rhinitis, particularly chronic infections of the paranasal sinuses, also frequently give trouble.

The symptoms of uncomplicated vasomotor rhinitis are most commonly intermittent. They often assume a diurnal pattern of exacerbations and remissions regardless of contact with offending substances. Symptoms are likely to be more severe in the morning and to reach their greatest severity at about the time the patient rises. After a stormy phase which may last minutes to several hours, the symptoms gradually abate and the patient is relatively comfortable. Some patients experience a less pronounced return of symptoms in late afternoon, particularly with fatigue.

Nasal congestion, with associated decrease in breathing space within the nose, is the most common complaint offered. Usually there is some nasal drainage which may be one of two types. Most characteristic is a watery secretion from the anterior part of the nose which may drip from the nose if the patient flexes his head. The other type consists of more than a physiologic amount of postnasal drainage of mucoid material. This type of nasal drainage characteristically occurs between the acute paroxysms of nasal congestion. Sneezing is usually, although not necessarily, associated with vasomotor rhinitis. Patients who have nasal allergic disease sneeze many times in quick succession, whereas those who have a common cold rarely sneeze more than three times. This observation is a point of diagnostic value. An intense sensation of itching in the conjunctiva, palate and ears often occurs in extrinsic vasomotor rhinitis. Discomfort in the region of the paranasal sinuses frequently is observed by patients during paroxysms of vasomotor rhinitis.

The symptoms of vasomotor rhinitis gradually become more persistent if polypoid degeneration of the nasal mucosa develops. Not infrequently interference with drainage of the paranasal sinuses leads to retention of secretion and is followed by chronic infection of these cavities.

The pathologic changes associated with vasomotor rhinitis vary with the severity and the duration of the condition. Grossly the mucous membrane becomes boggy, pale and somewhat bluish. In cases of longer duration, polyps may develop. The nasal secretion in allergic vasomotor rhinitis contains a considerable number of eosinophilic leukocytes, and this finding is a point of diagnostic importance. In cases in which chronic sinusitis has developed, purulent secretion may be observed, usually in the middle meatus of the nose or on the posterior pharyngeal wall. Nasal secretion contains no reducing substance; this characteristic of nasal secretion is of value in differentiating the drainage of vasomotor rhinitis from cerebrospinal rhinorrhea. When the patient presents a history of meningitis or of severe injury to the head, the possibility of cerebrospinal rhinorrhea should be considered. Cerebrospinal rhinorrhea may occur spontaneously and is suggested in those instances wherein unilateral drainage occurs. All known factors contributing to vasomotor rhinitis should be considered and their roles evaluated in each case. It has been found helpful to approach the treatment of vasomotor rhinitis with a consideration of the etiologic fac-

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tors and complications. These are listed in the following outline.

1. Etiologic factors.
   (A) Allergic factors.
   (B) Physical allergic factors.
      (1) Exaggerated nasal responses to normal stimuli.
      (2) Exaggerated nasal responses to increased stimuli, usually occupational.
   (C) Neurogenic factors.
   (D) Endocrine factors.
      (1) Hypothyroidism.
      (2) Pregnancy.
      (3) Menopause.
   (E) Chronic nasal irritation.
      (1) Physical irritants.
      (2) Chemical irritants.
      (3) Infections.
         (a) Chronic sinusitis.
         (b) Acute respiratory infections
   (F) Intranasal structural abnormalities.
2. Complications of vasomotor rhinitis.
   (A) Chronic sinusitis.
   (B) Polypoid degeneration.
   (C) Vasodilating pain syndrome.

A brief description of the diagnostic factors and special features in the management of vasomotor rhinitis, due to various etiologic factors, and of the complications will be given. Then certain specific therapeutic procedures will be considered.

Allergic Factors

In an evaluation of the allergic factors in vasomotor rhinitis, several criteria may be considered. The age at which this disease appears is significant. True allergic vasomotor rhinitis most commonly appears before the patient is forty years old. Vasomotor rhinitis in younger individuals does not always indicate the presence of a specific allergic factor; nevertheless, in most instances there is one. The occurrence of allergic diseases in other members of the family, or the coexistence of other manifestations of allergy in the patient, is suggestive of an extrinsic causation for vasomotor rhinitis. Patients in families presenting allergic diatheses are more subject, however, to vasomotor rhinitis of both allergic and other types.

An allergic survey should be undertaken, and skin tests should be made with common allergens with which the patient may come into contact. It is good practice to include at least the inhalant and ingestant allergens shown in the accompanying list in such a survey.

In addition to these substances, the occupational, recreational, domestic and dietary allergens that the patient may encounter should be considered and the necessary tests made. It is well also to evaluate the role of miscellaneous substances, such as cottonseed, flaxseed, karaya, molds and wool, in causing the disease. We have largely excluded from consideration in this presentation the testing of patients for seasonal symptoms resulting from pollinosis.

Sensitivity to the substances among the inhalants should be tested by the intracutaneous method. When pollens are in the atmosphere or when the patient is known to have pollinosis, the pollen extracts are best omitted from the group of allergens tested intracutaneously, inasmuch as the small amount of an extract of a pollen injected into the skin may evoke an untoward response. For children for whom intracutaneous testing may prove objectionable, scratch or passive transfer skin testing may be substituted.

Inhalants	*Ingestants*
Mixed ragweed	Buckwheat
Orris root	Corn
Timothy	Oats
Cat hair	Rice
Cattle hair	Rye
Dog hair	Whole wheat
Goat hair	Whole egg
Horse hair	Beef
Rabbit hair	Chicken
Chicken feathers	Pork
Duck feathers	Lamb
Goose feathers	Cocoa
House dust	Whole milk
Kapok	Orange
Pyrethrum	Peanut
	Potato

Sensitivity to the substances among the ingestants is best determined by the scratch method. Equivocal results may be re-evaluated by intracutaneous testing if this should appear to be warranted. When the history is negative for trouble following ingestion of substances contained in this group, tests may be omitted for most patients who first develop nasal disease at an age past forty years.

Instructions in the avoidance of substances yielding positive reactions on skin tests should be outlined definitely in the case of inhalant allergens and should be considered in the case of ingested allergens.

In most cases in which there is an allergic factor, a plan for a dust-free bedroom should be provided. The preparation of such a room should include the removal of rugs, overstuffed furniture, drapes, the contents of closets and all other common sources of dust. Covers impervious to dust should be applied to both the pillow and

mattress. If there are two beds in the room, both should be prepared in this manner. Feather ticks and down comforters should be discarded. Woolen bedclothes devoid of lint may be used, and a generous fold of sheet should be placed over the upper portion of the blankets. Changing and storage of clothing should be done outside this room. Small animals should be kept from the room. Steam or hot-water heat is preferable to hot-air heat. If hot-air vents are in the room, filters of dust-proof fabrics should be provided for these. This room should be cleaned daily with a damp cloth rather than by sweeping or by a dust mop. Should the patient be a child, it is unwise to allow the use of stuffed or fur-trimmed toys.

When the avoidance of contact with an offending inhalant allergen is impossible, the advisability of specific desensitization should be considered. Results from desensitization are less favorable than one might wish. When results are good, the benefit sustained is frequently transient. Scrupulous avoidance of offending allergens remains the most effective form of therapy.

With regard to ingestion of allergens, it is possible that the conscientious patient may place too much emphasis on the problem, since it is uncommon for food to be of major importance in the etiology of vasomotor rhinitis which begins after the fourth decade of life. In use of diets designed to exclude offending foods, it must be remembered that no diet should allow the patient's nutrition to suffer. Brief trial periods of no greater duration than one month usually suffice to answer a physician's question concerning the role of ingested allergens. The occurrence of a positive reaction to a skin test is, in itself, insufficient evidence to omit from a diet nutritious foods known clinically to be tolerated. Through use of bizarre and inadequate diets, many patients will cause their health to suffer more than it would from the atopic disorders prompting the use of such diets.

Physical Allergic Factors

The role of "physical allergy," which usually means hypersensitivity of the patient to changes in temperature and the cooling effect of moving air, recently has been emphasized in vasomotor rhinitis.[6] Patients exhibiting this disturbance have grown extremely sensitive to such stimuli as wide variation in their environmental temperature, the moving air from fans, ventilating devices and air-conditioning systems, or contact of the skin with cold objects. Brief exposures to such stimuli will serve to evoke a response in the nasal mucosa far greater than the minimal physiologic responses noted in the great majority of individuals. The relationship between vasomotor rhinitis resulting from physical allergy and that from other etiologic factors is probably a close one. Patients with an essentially allergic vasomotor rhinitis often will exhibit an exaggerated sensitivity to the changes in temperature of their environment.

Patients who have physical allergy can be classed into two groups. The larger group consists of patients whose nasal responses are exaggerated to the usual changes in temperature which are well tolerated by most normal individuals. The smaller group is comprised of persons who are affected by wide variations of temperature or excessive movement of air encountered in their occupations. In this group are included butchers, florists, dairy workers, grocers, gas station attendants and others whose activities or occupations necessitate their frequent entrance into ice-boxes, refrigerated rooms or frequent passage in and out of doors. In such patients the nasal reflex responses may be normal to the usual stimuli but are exaggerated to occupational stimuli of greater degree.

Patients in both groups should strive to live in a constant environmental temperature in an atmosphere which is devoid of drafts. Rooms should be adequately humidified and heated without excessive movement of air from ventilating systems. At night the windows should be kept closed in order that the temperature may be maintained at 65° F. or more. The bed, chairs, desks and parts of the house frequented by the patient should be arranged so that he can avoid cross ventilation. Care should be exercised to minimize as much as possible the necessity for entering air-conditioned buildings and theaters. Adequately warm dress should be encouraged. Minor changes in routine followed in the course of an occupation may greatly lessen contact with the objectionable factors listed.

Neurogenic Factor

The neurogenic factor is a major contributing cause in the production of nasal symptoms of many patients. The responses observed in vasomotor rhinitis result from a reflex mechanism,

and their severity may be appreciably altered by the emotional state. Therapy directed toward the correction of any underlying nervous tension frequently will decrease the severity of nasal symptoms. Likewise, it is apparent that the patient's ability to tolerate discomfort of constant degree will be appreciably diminished by a tension state.

Endocrine Factors

Nasal changes characteristic of vasomotor rhinitis are observed in the course of certain endocrine disturbances. Lillie and Haines[4] called attention to such a disturbance among patients who have excessively low metabolic rates but do not have myxedema. An elevation of the metabolic rate in such cases is often associated with a regression of nasal symptoms. Vasomotor rhinitis likewise is at times a troublesome complication of pregnancy. Termination of the pregnancy through parturition often brings remission of the symptoms. Women experiencing vasomotor instability associated with the menopause will at times find a paroxysm of vasomotor rhinitis beginning with the flushes. Treatment with estrogenic substances is of value in such instances.

Chronic Nasal Irritation

Even in the absence of definite evidence of sensitivity, patients who have vasomotor rhinitis should exercise every precaution to avoid contact with physically irritating substances which might further aggravate their nasal condition. The use of a dust-free bedroom, the disposal of rug pads, and adequate slip covering or disposal of overstuffed furniture will serve to minimize common sources of nasal irritation.

Certain physically irritating habits may develop. Habits of sniffing, hard blowing, hacking and other objectionable practices into which the victim of vasomotor rhinitis may fall should be discouraged.

Likewise, chemical irritants should be avoided if everything therapeutically is to be done to control the vasomotor rhinitis. Tobacco smoke, occupational fumes and contact with heavily scented objects frequently will initiate a paroxysm of nasal congestion or sneezing. To be discouraged is the practice of self-medication by nose drops, sprays and irrigations.[3] Although many of these astringent solutions will shrink the nasal membranes for brief periods, the irritation they provoke in so doing serves only to aggravate ultimately the chronic nasal disease.

The drainage of secretions from the paranasal sinuses is impaired by mucosal edema during a paroxysm of vasomotor rhinitis. Polypoid degeneration of the nasal mucous membrane likewise will disturb adequate drainage of the sinuses, thus tending to bring about a chronic infection in these chambers. Conversely, the constant seepage of irritating and infectious exudates serves to perpetuate the changes noted in vasomotor rhinitis. Should other measures in the management of vasomotor rhinitis fail to bring about regression in the size of polypoid tissue and fail to produce sufficient drainage to allow subsidence of chronic sinusitis, intranasal surgical procedures may be warranted. The use of radium to effect a subepithelial fibrosis after polypectomy helps to prevent recurrence of the polyps. Radium applied to lymphoid structures in the nasopharynx is at times valuable in securing adequate drainage from the paranasal sinuses. A transient type of vasomotor rhinitis at times is observed for days to weeks after upper respiratory infections.

Intranasal Abnormalities

A widely deflected nasal septum, nasal spur or markedly hypertrophied nasal turbinates through contact with other intranasal structures may reflexly initiate changes in the nasal mucous membrane which are characteristic of vasomotor rhinitis. The surgical correction of such structural abnormalities in the treatment of vasomotor rhinitis should be deferred until more conservative methods of therapy have proved ineffectual. Before each surgical procedure is undertaken, its probable benefit should be weighed carefully against the disturbance of intranasal physiologic processes which may follow the operation.

Complications

In addition to the polypoid degeneration and chronic inflammatory changes so often observed consequent to vasomotor rhinitis, which were mentioned under chronic irritation, there is a third complication, the vasodilating pain syndrome.[7] Often patients who have this complication complain bitterly of discomfort in the region of the nasal accessory sinuses, but no active inflammatory changes are evident within the sinuses. At times, fatigue or tension serves to aggravate the severity of symptoms of "stuffiness" or "fullness"

which occur in the course of vasomotor rhinitis. When pain about the face is the presenting symptom, care should be exercised to exclude an underlying though minimal vasomotor rhinitis as an etiologic factor. At times vasomotor rhinitis will serve to initiate pain of the so-called sphenopalatine ganglion syndrome wherein the reference of pain extends from the region of the eye to the ear and into the neck.[5]

Specific Treatment

The number of specific forms of therapy for vasomotor rhinitis recommended in the literature suggests the situation existing in the pre-insulin era of diabetes mellitus. No one form of treatment has been spectacularly successful to the exclusion of other procedures. There are, however, a number of useful procedures which deserve consideration because of their advantage in selected cases.

The recent advent of drugs manifesting antihistaminic properties represents an advance in the treatment of vasomotor rhinitis. The use of β-dimethylaminoethyl benzhydryl ether hydrochloride (benadryl) and N,N-dimethyl-N′-benzyl-N′-(α-pyridyl) ethylenediamine monohydrochloride (pyribenzamine hydrochloride or triplennamine hydrochloride) is of value in these nasal allergic disorders. Using the latter drug, Feinberg[1] found that 64 per cent of patients with vasomotor rhinitis were helped. The usual dosage employed in treatment of vasomotor rhinitis with either benadryl or pyribenzamine is 150 to 200 mg. daily in three or four divided doses. The drug is preferably administered after meals and at bedtime.

The use of nicotinic acid is helpful in cases in which the "physical allergy" component is of greatest importance. It is of value because of its vasodilating properties and not because of its relationship to the vitamin B complex. It is good practice to administer nicotinic acid as follows: Injections are administered subcutaneously in daily doses beginning with 25 mg. These are increased by increments of 25 mg. daily to tolerance or until a dose of 100 mg. is attained. Subcutaneous injections of 100 mg. are continued daily for one month. If improvement takes place, an additional two months of parenteral therapy is advisable, after which nicotinic acid may be given by mouth instead of parenterally. When the drug is given by mouth, the dose tolerated is usually from 150 to 200 mg. daily in divided doses.

Histamine therapy[2] has on occasions proved useful in a few cases of vasomotor rhinitis.

Cauterization of the nasal mucous membrane in the region overlying the sphenopalatine ganglion with a 50 per cent aqueous solution of silver nitrate will at times give temporary relief. This had best be done by one well acquainted with intranasal procedures in the therapy of nose and throat diseases.

Iodides, administered orally in the form of the potassium or sodium salt, remain especially valuable in the care of patients whose primary complaints are referable to inspissated mucus in the nasopharynx and on the posterior pharyngeal wall. Such mucus is thinned, a procedure which relieves the nasal irritation associated with such dried secretions. In hypersensitive individuals, having an unwarranted fixation of their attention on their nasal functions, such treatment is especially helpful.

Comment

We have much to learn about nasal physiology and disturbances which may take place in the functions of the nose. This program for the management of vasomotor rhinitis has proved useful in many cases and has helped as a guide in the study of patients presenting the troublesome condition of vasomotor rhinitis.

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CHOLINE AND OTHER LIPOTROPIC FACTORS

Mechanism of Action and Significance in Chronic Liver Disease

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A LIPOTROPIC factor may be defined as an agent which prevents or removes an accumulation of excess fat in the liver. For the purpose of this discussion, the factors so far found to have a lipotropic action may be grouped on a biochemical basis. The first group consists of choline and the compounds which have been established as exerting their lipotropic action by virtue of their role in choline synthesis *in vivo*, namely, betaine and methionine. In a second group may be placed those factors whose exact nature and method of action are at present uncertain, namely, lipocaic and inositol.

Among those investigating these factors in the laboratory there has been and remains considerable difference of opinion as to the nature and mechanism of action of some of the lipotropic agents. While a certain unanimity of opinion regarding the choline group has been reached insofar as its use in the laboratory is concerned, the status of lipocaic and the pancreas factor is still a controversial point. This has partly been due to the many variables present:

1. The make-up of the dietary feeding used before and during the test period.
2. The duration of the test period.
3. The amounts of the test substances being used.
4. The experimental animal.

It is the purpose of this discussion to make an attempt at resolving some of the divergent opinions now extant, by a presentation and comparison of the experimental findings to date.

It is also important to note the considerable significance of these experimental findings in the pathogenesis of the cirrhotic states. Cirrhosis is considered by many to be the end point of a process initiated by fatty infiltration. On this basis the lipotropic factors have been used as therapeutic agents in the acute, infectious and toxic forms of hepatitis and in established cirrhosis with varying results.

The Choline Group

Choline is an amine—trimethyl beta hydroxy ethyl ammonium hydroxide—$(CH_3)_3$ N.OH. CH_2CH_2OH. In a consideration of its lipotropic action, the process of fat transport from the liver must be understood. As neutral fats and fatty acids are insoluble in blood, they must be converted to phospholipids. Paul and his associates stated in 1947 that fat metabolism is not a simple breaking down of the ingested fat for immediate use and a storing of the remainder in inert depots. Storage is a phase in a dynamic equilibrium. The essential factor is fat transport. It is thought that this change to phospholipids in the liver is effected by the incorporation of phosphoric acid and choline into the fat molecule. In 1944 Peters, Kendrick and their associates stated that choline furnishes labile methyl groups for the synthesis of phospholipids from fatty acids. However, in 1946, McArthur, investigating the incorporation of a choline homologue into liver phospholipids, found arseno-choline, which possesses no labile methyl groups, to be lipotropic and incorporated in the phospholipid molecule after experimental feeding.

The bulk of the evidence to date indicates that choline is the most powerful of the lipotropic factors in experimental work on the rat and is effective in reducing the total lipid level in the liver in all fractions.

The speed and strength of action of choline depends on several factors:

1. The constituents of the diet presented to the rat before and during the test period.
2. Choline is concerned with lipid phosphorylation in the small intestine as well as in the liver, and hence, part of the ingested choline will be utilized in the intestine. Artom and Cornatzer in 1946 reported their experiences in this connection with radioactive phosphorus.
3. While choline is known to act by increasing the rate of phospholipid "turnover" in the liver, the rate of loss of lipids from the liver, i.e., lipotropic activity, does not necessarily parallel this rate of turnover. Horning and Eckstein in 1946 reported their investigations on this subject using radioactive phosphorus. It was concluded that an increase in phospholipid activity does not necessarily connote an increase in fat metabolism. Only

when the phospholipid shift is from liver to blood is lipotropic activity manifest.

There is little doubt that plasma phospholipids are formed in the liver, and hence, the phenomenon of lipotropism occurs. Entenman and his collaborators in 1946 found in *normal* dogs that specific activity of the choline-containing phospholipid phosphorus of the liver, as measured with P 32, is higher than in plasma phospholipids. This would suggest that nearly all the phospholipids of the plasma are formed in the liver.

4. Choline has other actions in addition to its lipotropic effect. It is, of course, a precursor of the neurohumor acetylcholine. Its deficiency has been found to produce hemorrhagic kidneys in experimental animals, an occurrence apparently closely related to the development of fatty livers. Best and others have emphasized its role in growth. Several observers have noted that the strength of the lipotropic action can be impaired under certain circumstances because a portion of the ingested choline is taken up with the above processes.

Betaine and Methionine

It is now accepted almost unanimously that the alkaloid betaine and the amino-acid methionine are not unique as lipotropic factors but exert an effect by supplying methyl groups for the synthesis of choline *in vivo*. The availability of methyl groups in methionine is indicated by its formula:

$$CH_3.\ S.\ CH_2.\ CH_2\ (COOH).\ CH\text{-}NH_2.$$

In 1946, Du Vigneaud and his group investigated betaine in transmethylation reactions. They labelled the methyl groups with deuterium and the glycine component with N 15. They also fed glycine labelled with deuterium. These two compounds were fed to pairs of rats receiving choline-free diets. In the betaine animals, choline and creatine were isolated from tissues and analyzed for deuterium and N 15. The glycine animals were similarly investigated for deuterium. Du Vigneaud's results show that methyl groups from betaine appear as quickly in tissue choline as when choline is given. This would signify a direct conversion. However, the N 15 of the glycine moiety apparently does not undergo this direct conversion. It appeared rapidly in tissue glycine and much more slowly in tissue choline. It is probable that the N 15 goes to the choline through glycine and ethanolamine. The dimethyl glycine was found to contribute a very small amount of methyl groups to tissue choline, but did not appear to exert a lipotropic effect.

Du Vigneaud presented similar evidence to the above to show methionine's action in lipotropism.

The ability of methionine to offer labile methyl groups has also been found valuable in the later stages of the process leading to cirrhosis. Best and Taylor state that methionine prevents necrosis and cirrhosis. It supplies methyl groups for the formation of cystine which prevents necrosis, and itself supplies sulfur which is anti-necrotic, and by transmethylation forms choline which prevents cirrhosis. It is also largely responsible for the lipotropic effect of a high protein diet.

Inositol

The vitamin inositol, a member of the B group, whose formula is $CHOH\ (CHOH.CHOH)_2\ CHOH$, and which resembles a hexose, has definite lipotropic action but its mechansim is uncertain. As can be seen from the formula, it probably does not act as a transmethylator and is not known to be involved in the synthesis of any other factor, though it is known to act with choline in a synergistic manner. Handler in 1946 stated his belief that inositol either forms inositol phospholipids or acts as a phosphorylating catalyst. As will be indicated later, some workers think it may be an active factor in lipocaic.

Lipocaic

The considerable divergence of views which prevails in the field of lipotropics is greatest in the consideration of the anti-fatty liver factor of the pancreas. This controversy began when Dragstedt postulated a second internal secretion of the pancreas in addition to insulin which he called "lipocaic," a word derived from the Greek meaning literally "I burn fat." Dragstedt, Prohaska and Harms reported their findings in 1936. In one phase of their report they were concerned with the relation of pancreatic juice to fatty infiltration and degeneration of the liver in the depancreatized dog. In their first group of tests they effected a total loss of pancreatic juice through a pancreatic fistula. The dogs were fed a meat, bread and whole milk diet. Of four dogs, two developed subcutaneous abscesses and died in thirty days. Moderate fatty liver infiltration was noted at post mortem. Another died at

twenty-three days and had slight infiltration. The other dogs were sacrificed at twenty-six, thirty-five, thirty-nine and forty-three days postoperatively, and no excess liver fat was seen.

In their second set of experiments the pancreatic ducts were ligated and divided. (It was found that duct ligation caused acinous degeneration, so that there was no opportunity for pancreatic juice to be formed and absorbed directly into the blood stream.) The pancreas was separated from the duodenum. The animals died in less than eighty-three days from degeneration of the pancreas, but only two animals showed liver infiltration.

Further work with the depancreatized dog showed that 25 grams of raw pancreas per day was required to keep the liver normal. The amount of choline required to prevent hepatic infiltration was found to be 1.0 grams. This was calculated to be fifteen times as much as was present in 25 grams of raw pancreas. Beef brain, containing large amounts of lecethin and choline gave no protection against infiltration in one dog. In another dog beef liver was found to be ineffective. Dragstedt concluded from these findings that the absence of pancreatic juice is not the cause of the rise in liver lipids. He also asserted that the liver change noted in some animals after duct ligation was minimal. Sections of the liver tissue were reproduced to show the very extensive zonal infiltration occuring in some cases and the very slight collections of fat droplets in others. It was considered that the beneficial effect of raw pancreas is not due to contained enzymes or to improvement of digestion occasioned by those enzymes. Choline was not thought to be the factor responsible.

These investigations are perhaps open to certain critical analysis for the following reasons:

1. No mention was made of the considerable amounts of choline and methionine undoubtedly present in free or combined form in the meat diet used.

2. The duration of the test periods was not nearly sufficient in the light of later work.

3. The fact that many of the dogs died could not but have a vitiating effect on the value of the findings.

In their second 1936 report the results of observations on a pancreatic substance which permitted survival and prevented liver changes in the pancreatectomized dog were given. Forty-five dogs received complete pancreatic excision. Eight dogs received no dietary supplement and died in two or three weeks. (All dogs in these experiments were fully maintained on insulin.) The livers were markedly fatty. Fractionations of the pancreas were undertaken in an attempt to secure the liver-protecting substance. Several different extracts from approximately 100 grams of pancreas were fed postoperatively to the dogs whose livers indicated fatty infiltration on biopsy. Three to four weeks later another biopsy was taken and the two specimens compared. The extracts used were as follows:

1. A fat-free alcohol extract.
2. An ether extract.
3. The pancreatic residue.
4. A salt solution extract of the pancreas residue.

The ether extract contained mainly the pancreatic lipids and had no protective effect. The fat-free alcoholic extract given in doses of 1.0 to 1.5 grams of dried substance was lipotropically active. The pancreatic residue and its saline extract were also effective. The substance, then, was considered insoluble in ether and soluble in alcohol and 5 per cent saline. It was not considered present in pancreatic juice. The general conclusion was, therefore, the discovery of a new pancreatic hormone which under normal conditions plays a role in fat transport.

In 1946 Dragstedt and his associates studied the effect of oral and parenteral lipocaic and oral inositol on the dietary fatty liver of the white rat. In this report it was admitted that the status of lipocaic as a true hormone is a matter of debate. It was felt, however, that lipocaic is a distinct substance apart from choline and its precursors.

In answer to the conclusions of McHenry and Gavin that the preparations of lipocaic they used contained enough inositol to account for lipotropic activity, Dragstedt stated that inositol was entirely ineffective in preventing or curing fatty livers in depancreatized dogs even in doses as large as the active preparations of lipocaic. As these pancreatic extracts could not be pure inositol, lipocaic activity could not be accounted for by the presence of inositol.

Other Investigations on the Antifatty Liver Pancreas Factor

Entenman and Chaikoff and their associates presented reports beginning in 1941 on their work with the totally pancreatectomized dog. In 1941 they investigated the possibilities of choline as the factor in the pancreas producing lipotropic phenomena.

Their researches, in contrast to those in Dragstedt's laboratory, showed that duct ligation of the pancreas produces fatty livers in the dog and that with ligated ducts fresh pancreatic juice inhibits high liver lipid levels. They felt that this means that in the normal animal, pancreatic juice is responsible for the maintenance of a normal liver. As choline performs this function as well as pancreatic juice, perhaps it is the responsible pancreas constituent. They felt, however, that the question is still in doubt as to the real relation, if any, between choline effect and pancreas effect. They pointed out, as others have, that lipogenesis and lipotropism in the rat and dog liver are not necessarily identical processes.

Their experiment on choline and pancreatic extract was carried out on twenty-five dogs. Each dog received a lean meat and sucrose diet supplemented with vitamins for one to three weeks preoperatively. Postoperatively the sucrose diet level was raised and insulin was injected daily. The dogs were given raw pancreas in addition to the basal diet to keep the liver free from fat until they had recovered completely from the effects of surgery. When the dogs were adjudged fit insofar as appetite and the state of the operative wound were concerned, selective feedings with two pancreas fractions, "AR" and "KAR," and choline were begun. Livers were removed for analysis at intervals. Fraction AR was the pancreas residue after extracting with acetone and ether. It was stored at 18° C. until used. One gram was equivalent to 5.5 grams raw pancreas and was found effective lipotropically for as long as twenty weeks. The KAR fraction was a thoroughly autoclaved (20 pounds pressure for thirty minutes) amount of fraction AR. It was found lipotropically inactive in doses of 4 grams per day, indicating that the lipotropic substance is heat labile.

The *minimum effective dose of choline* (the amount required to keep the liver fat normal—approximately 2.6 per cent—4 per cent total fatty acids by weight—for fifteen to twenty-two weeks) was found to be 36 mg./Kg. A dosage of 15 mg./Kg. was not effective. As 250 gm. of raw pancreas contains 575 mg. of choline, choline was more than sufficient to account for the effectiveness of this amount of pancreas.

It was found that 250 grams of autoclaved pancreas gave full protection and also was curative. Therefore, choline may be a heat-stable factor. But 1 gram of AR gave full protection, and at most it contained 13 mg. of choline, an amount well below the minimum effective dose.

The destruction of the active principle in AR by heat suggests that the choline in AR was not involved in the lipotropic action.

But while these experiments showed that AR effect was not due to choline, it has not been ruled out that additional amounts of choline are made available to the organism by the presence of AR in the intestinal tract.

In 1944, further work on the pancreas factor was reported from the laboratory of Entenman and Chaikoff. As before, dogs were carefully chosen as to appetite; they were fed high protein diets with caloric and vitamin supplements preoperatively and raw pancreas for a varying number of weeks postoperatively. The regimen was kept up during the test period, the only variable being the test substance substituted for the raw pancreas. The test period was sixteen to twenty weeks. It was shown that a normal liver could be maintained on any one of the following constituents (not necessarily minimum doses):

1. 5 gm. raw pancreas.
2. 300 mg. choline chloride.
3. 500 c.c. pancreatic juice.

It was noted that the consistent development of fatty livers takes as long as twenty weeks. It was further shown that pancreas in the intact animal or pancreas feedings in the excised animal does not exert a storage effect.

Pancreatic juice fed to five dogs in the test period gave fatty acid levels of 3 to 7 per cent. It was concluded that the pancreas produces an external factor present in the juice. Lipocaic was tested during the experimental period and blood

samples were checked for lipids and cholesterol at intervals. Their *results* showed:

1. The fraction AR (described above) gave *liver lipid* values of less than 4 per cent. Six dogs received lipocaic for ten to fourteen weeks; none had normal liver lipids, and three showed over 40 per cent. This lipocaic was derived from 15 grams of raw pancreas.
2. Lipocaic in amounts equivalent to 100 grams pancreas was administered for as long as twenty weeks. Only two dogs had a near normal fraction. Total liver fatty acids ran as high as 40 per cent.

Blood lipids.—Previous work had shown a fall in blood lipids when pancreas feedings were withheld in the excised dog. The lipids were normal with pancreas feedings. In the present experiment, blood lipids were checked before excision, during pancreas feeding and then up to twenty weeks during lipocaic feeding.

Results.—All dogs on raw pancreas maintained normal levels in blood lipids. There was a fall in *all* fractions, including cholesterol, during the test period on lipocaic. 5.5 gm. of pancreas were found sufficient to keep postoperative levels higher than preoperative levels.

Their conclusion.—Lipocaic is a poor source antifatty liver factor of the pancrease.

The mechanism of action of the pancreas antifatty liver factor.—Fatty livers develop even when diet is rich in choline or labile methyl groups, but is prevented by free choline or pancreas fractions. It has been shown that choline-free fractions of pancreas are effective lipotropically. With increased liver fat and when pancreatic juice is withheld, blood phospholipid values drop. It has been found that 95 per cent of plasma phospholipids are of the choline-containing type. This is strong evidence that *circulating* choline is deficient in the dog lacking intestinal pancreatic juice. After ligation or excision, plasma choline dropped from 61.3 to 46.6 mg./100 c.c. and remained below normal for as long as one year. One gram of fraction AR prevented such a fall, or raised the level to normal after it had fallen. It appeared from this work that the pancreas contains a substance highly active in choline metabolism.

Discussion.—Phospholipids apparently serve as choline transports as well as fat transports. As these phospholipids are practically all choline-containing, it might be concluded that they are connected with the physiological activity of circulating choline. The action of pancreas fractions in increasing the plasma choline is not dependent on choline as such in diet. The extra choline must come from tissues or synthesis.

When fatty livers occur, there must be an interference with the mchanism by which bound dietary choline and methionine are made available or in the synthesis of choline from methyl donors. Methionine was found lipotropically effective in depancreatized dogs in feedings up to twenty weeks. As methionine was shown previously to be a precursor of choline by virtue of its labile methyl groups in rats and dogs, no pancreas supplement was needed. Entenman and his associates concluded that the pancreas factor is not concerned with *in vivo* synethesis of choline or its lipotropic action. They thought that the pancreas factor might be responsible for freeing the bound methionine in protein in the diet. They therefore postulated the pancreas factor as a *proteolytic enzyme.*

General Conclusions in Regard to the Pancreas Lipotropic Factor as Compared to Choline

1. Most investigators are agreed that there is a specific substance manufactured in the pancreas which is not choline or one of its precursors, and which has a lipotropic action, direct or otherwise.
2. Lipocaic, as described by Dragstedt and as manufactured by commercial houses, does not give the same results in the hands of different investigators. It might be legitimately concluded that the name *lipocaic* does not at present represent a thoroughly standardized pancreatic extract in terms of potency and lipotropic effect. It can also be stated that there is, as yet, no conclusive proof that lipocaic represents a true hormone. While the experiments of Dragstedt seemed to show that pancreatic juice was not active lipotropically, other investigators found pancreatic juice very effective in preventing fatty livers in dogs. The evidence to date would indicate that the term *lipocaic,* as connoting an internal secretion in the pancreas which is active lipotropically, is not valid. However, there seems no doubt that the pancreas does contain a factor active in clearing fat from the liver which is neither

a member of the choline group nor inositol. Whether it acts directly on the liver fat, as does choline, remains a question. Present evidence points to an indirect action. It may act by releasing choline, or one of its precursors, from a bound form to a form freely available for direct lipotropic activity. At the present date it appears that choline is the only factor that lowers liver lipids by direct combination with the liver-fatty acids to form phospholipids.

Experimental and Therapeutic Findings in Regard to Choline and Chronic Pathological Processes in the Liver in the Laboratory Animal and in Man

As choline and methionine have been used in several clinics for the treatment of acute and chronic affections of the liver in man, it is of value to ascertain the relationship of the lipotropic factors to the pathological process. Copeland and Salmon in 1946 presented evidence that choline deficiency in the rat may produce the steps leading to cirrhosis and even neoplastic change.

Eighty-eight rats were given a low choline diet consisting of peanut meal, casein, sucrose, lard and salt, with added vitamin supplement (which included inositol). Nineteen animals received choline throughout the test period, and served as controls. It was found that a complete lack of free choline resulted in the death of the rats before advanced liver change could be noted, so the test animals were given minimal amounts of choline at intervals merely to keep them alive. Twenty per cent died in six weeks. The remainder were kept alive for several months, though they showed gradual general degeneration.

At the end of twenty-eight days, biopsies showed swollen heavy livers; fatty acids and neutral fats were demonstrated in globules. At three months there was fatty infiltration zonally and degeneration—a "pre-cirrhotic state." This was judged by the increase in fibrous tissue and a rapid rate of cell destruction and regeneration. At eight months a "hobnailed" liver was produced—a typical cirrhotic picture. There was perilobular fibrosis, and intralobular strands of connective tissue were seen. Numerous mitotic figures and giant cells were observed. Cells were occasionally arranged in sheets, whorls and acini-like formations. In 30 per cent of the rats surviving eight months there were areas resembling adenocarcinoma—cords of cells, solid masses and acini-like whorls. This growth was made up of stratified epithelium. The controls did not show any neoplastic tendency. These authors concluded that a definite sequence of events, from fatty infiltration through established cirrhosis, occurred in the rat in choline deficiency.

On the subject of *lipotropic agents and chemical poisons* in the liver, most workers are now agreed that choline does not prevent fatty infiltration in $CHCL_3$, CCL_4, phosphorus and other poisoning, but does hasten recovery by removing fat.

Therapeutic trials of the lipotropic agents in *infectious hepatitis and chronic liver disease,* including the enlarged fatty liver with early fibrosis and the shrunken liver of atropic cirrhosis, have so far been equivocal.

Paul, Daum and Kemp in 1947 used choline in several cases in which they felt there was a disorder in fat metabolism. They felt that malnutrition is a major factor in cirrhosis. In a normal diet, sufficient lipotropic factors are supplied to convert ingested fat to phospholipid. Due to dietary imbalance (high fat, low protein, low carbohydrate and low vitamin) in *alcoholism,* a fatty liver is initiated, and irreversible changes may follow. By reversing these factors and adding choline, they felt that fat would be mobilized and appetite would improve. In *diabetes mellitus* they considered that normal utilization of endogenous insulin is dependent on normal liver function. When this function fails, extra insulin, even exogenous, is required. Liver dysfunction and damage is known to occur in a high percentage of diabetics, particularly in acidosis and coma. Hyperglycemia and glycosuria can result from obesity alone. They have found benefit from choline in diabetic liver damages, psoriasis, burns and the hepato-renal syndrome.

In their therapeutic trials, Paul and his group used choline dihydrogen citrate, 25 per cent in a syrup vehicle, which they found the most palatable of the choline salts. The standard amount of choline used was 3 grams per day, given in divided doses three times per day. Their nondiabetics received a low-fat, high-protein diet while the diabetics received a routine diabetic diet. The trials were first run on normals. The average normal values without choline for the blood lipid fractions were as follows:

Total fats	500-700 mg. per cent
Phospholipids	195-255 mg. per cent
Cholesterol	150-200 mg. per cent
Cholesterol esters	60- 70 mg. per cent

In these controls there was wide variation from one individual to the other, but each individual tended to maintain a fairly constant lipid fraction *ratio* when choline was given to these controls for twenty days. Each fraction tended to be stabilized nearer the average normal. Phospholipids showed the least change but tended to go higher when *seventeen cirrhotic* persons were checked for fifteen days on choline. There was no uniform change, but there appeared to be a tendency for one or more of the values to approach normality. There seemed an over-all improvement in the blood lipid picture which previously had shown low values. In *diabetes mellitus* two groups of five each were treated, one with choline, the other without. The choline-treated patients showed a definite trend toward normal values. For a larger series of twenty patients in the control group and twenty in the "choline group," twelve controls had a normal total fat reading while eight had an abnormal reading. In the choline-treated group, seventeen showed normal readings while three had abnormal total blood lipids.

Clinically, there was an undeniable improvement in general well-being, particularly where abnormal fat metabolism was recognized before treatment. There was thus a correlation between the laboratory findings and the clinical response as measured by appetite, feeling of well-being and vigor. When choline was withdrawn, patients reported feeling less well in three weeks.

General Conclusions Regarding Lipotropics and Liver Pathology

1. From the experimental evidence reviewed, it seems reasonable to conclude that cirrhosis or irreversible fibrosis of the liver is an end result of a process initiated by fatty infiltration. One laboratory has shown that neoplastic change may occur with or following fibrotic change, and implicates choline deficiency as a possible carcinogenic factor. This postulation requires considerably more investigation, however, before any definite relationship can be established.

2. This fatty infiltration seems due to a negative rather than a positive factor. The bulk of the above evidence indicates that this negative factor is a lack in the diet, or in the organism, of substances which directly or indirectly have a lipotropic influence; and in most instances, addition to the ingested diet of these substances effects a reversal of the infiltrative process in the liver, with a consequent rise of the lipid fractions in the blood.

3. The most consistently reliable of these factors has been shown to be choline, which exerts a lipotropic effect in rat, dog and man. The pancreatic factor is also effective, though to probably a lesser degree. As pointed out above, however, it may act only indirectly by effecting in some way an improvement in choline metabolism. At present, choline seems the only compound which acts by direct molecular combination with the liver fatty acids and neutral fats.

4. Considerably more experimental and therapeutic trials are required before choline and similar agents can be adopted as definitive therapy. While it seems true experimentally that choline exerts a beneficial effect by clearing the fat from the liver, therapeutic trials have not always yielded unequivocal results. The possibility of toxic effects must be taken into consideration. Particularly, the possibility of circulating acetylcholine appears of definite importance.

5. Future experimental work should be directed toward the use of the lipotropic factors as prophylactic agents rather than curative drugs. The prevention and removal of excess liver lipids in the early and acute stage of liver disease should theoretically be possible with choline. But there is no evidence that the lipotropic agents should have any beneficial effect on the established fibrotic state, except where fatty infiltration is still a part of the pathological picture.

Summary

1. The term *lipotropic* was defined, and the substances which appear to produce a lipotropic effect were briefly described as to their experimental effects and relation to chronic liver disease.

2. The members of the choline group, choline betaine and methionine, were compared and experimental evidence regarding their effects was reviewed.

3. The evidence relating to inositol was presented.

4. The laboratory results on lipocaic and the antifatty-liver factor in the pancreas were reviewed and compared. The nature of the pancreas lipotropic factor was discussed.

5. The findings in experimental and therapeu-

tic tests of the lipotropic agents in relation to liver pathology were presented. The significance and limitations of choline and related compounds in liver disease were pointed out.

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THE TREATMENT OF OPEN WOUNDS OF THE HAND

(Continued from Page 1192)

for suturing of the digital nerves. There seems to be the impression that these nerves will regenerate spontaneously and that repair is not necessary. There is also the impression that the nerves are too small to suture. Both of these impressions are wrong. While it is true that overlap will compensate to varying degrees for loss of innervation on one side of a finger if the other side is intact, this overlap is never as good as the normal and may be a real handicap. If both digital nerves have been divided, the sensation has no chance of returning to the finger. In answer to the statement that the digital nerves are too small to suture is the experience of many surgeons in suturing them. They are not nearly as small as one thinks, and three or four fine sutures can easily be distributed about their circumference.

Fractures and dislocations should be reduced at the primary operation if the wound is such as to permit closure. Reduction should also be done even in older wounds unless there is a severe spreading infection already present which precludes any manipulation. Joint capsules should be sutured in any wound in which operative intervention of any sort may be undertaken, even if the wound cannot be closed afterwards. Internal fixation of bones may be undertaken if the wound is seen early. Ordinarily, most fractures of the hand can be reduced and held in reduction by molding the hand into the position of function or into the grasping position. In very few instances it is necessary to apply traction to the fingers to maintain reduction. In Bennet's fracture it is often advantageous to apply traction because of the shearing nature of the injury and the difficulty of holding the first metacarpal in position against the pull of the powerful flexors and extensors of the thumb. We have, however, in a number of instances been able to reduce and maintain reduction of the base of the first metacarpal on the universal hand splint which simply holds the hand in the position of function.

(To be concluded in December issue.)

UNRECOGNIZED FRACTURES IN HIGH SCHOOL ATHLETES

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AT the close of our 1945 football season the coach of our championship team had three of his players report with minor injuries of considerable duration. He referred them to our medical department where x-rays were taken which showed that each of them had a fracture that had been incurred earlier in the season. This surprised us considerably because this particular coach, in addition to being very well trained, had always been unusually prompt and efficient in taking care of his injuries. Apparently all these injuries had been considered so insignificant that the boys had not reported them to the coach or had deliberately concealed them. These three cases led us to make a study of our unrecognized fractures. By this we mean those fractures where the athlete continued to compete, without medical advice and in spite of his injury, until we later determined that he had a fracture. All of these cases followed about the same pattern. The boy had not thought his injury to be of any importance and had not notified his parents or reported to the family doctor for medical care. Instead, he had continued to compete until the coach sent him in to have the extent of his injury determined before using him further in competition.

Our study has been complicated by many factors. The parents often oppose the boy's playing football, and he consequently conceals his injury or explains it, if he has to, as a strain. Coaches are often so absorbed in coaching that they dispose of their injuries by telling the boy to "go see the doc" and then forget all about it. Coaches often bear down on the boys so hard that they will undergo all sorts of torture with injuries rather than be called a sissy, or yellow, or otherwise have their courage ill spoken of. Boys are often afraid that their teammates and friends will think they haven't any "guts," and so they take a Spartan attitude toward their injuries. As a result it is almost impossible to get boys to use a crutch or a sling or carry other visible signs of injury, except when the injury is a major one and some sort of protection allows no choice in the matter. If some of his teammates are present, the boy will usually submit without complaint to the manipulation of an injured part and will allow a fracture to be reduced without anesthesia.

After seeing the three cases mentioned above, we searched our records and found many similar ones. With some reluctance and intrepidation we began to x-ray all our strains. We soon found that one out of every four or five strains was, in reality, a fracture. We now have become so suspicious of strains that we have to be shown that one is a strain by proving by x-ray that it is not a fracture.

It might be well at this point to make it clear that we are interested in these cases primarily from an athletic point of view. We are not trying to provide medical or surgical care. If there is a chance that athletics under any condition will do harm to a boy, we wish to cut that chance to a minimum if not to zero. There are, of course, certain hazards inherent in athletics, but beyond them we wish every extra hazard eliminated. We must know at the earliest possible moment if a boy is unable to play. We prefer not to use any haphazard method in finding this out. It is our mission and duty to train youth properly. We wish to do this with the least chance of harm to the youth. With this in mind, it then becomes our duty to disqualify our unfit at the earliest possible moment. It is not enough to bar the weaklings and handicapped by a preseason athletic examination. Each boy who suffers an injury should be appraised physically as soon as possible to determine if further competition is permissible. Much harm may be done by leaving the matter to the family or even to the family doctor. Often the family is reluctant to incur medical bills and tends to muddle along if the injury is not extremely severe.* If the boy is seen by a doctor, parents often complicate things by demanding that the

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*This muddling along may involve paying no attention whatever to the injury. It may take the turn of ill-timed advice, such as going ahead and "work it out." It may result in the boy's getting into the hands of an amateur self-appointed "bone setter." It often results in a lot of heat being put on the coach, by well-meaning friends and relatives, to use the boy in spite of his injury. These are only a few of the things that can happen.



Fig. 1. X-ray in Case 1 showing a transverse fracture at the distal end of the fifth right metacarpal.



Fig. 2. X-ray in Case 2 showing an oblique fracture of the fourth metacarpal bone.



Fig. 3. X-ray in Case 3 showing an oblique fracture of the fifth metacarpal bone.

school pay the bill. Our city attorney has held that we cannot legally do this. The doctor then cannot be expected to co-operate wholeheartedly in a deal where he stands a major chance of being euchered out of his fee—certainly not when you consider that every fracture is a possible lawsuit. Often the family doctor does not have an x-ray, and even if he does he is likely to appraise the injury from a medical or surgical standpoint rather than from an athletic standpoint. The injury may be of minor importance medically or surgically and yet be of major magnitude from a competitive view. Many doctors prefer not to treat these cases because in one way or another they crowd the remainder of their practice all out of proportion to their medical or surgical importance. It is often hard enough for us to handle these cases when we hold all the factors in our own hands. To allow any slack to slip into the situation is to be unfair to both the student and to his coach. The boy should be allowed to play if he is able, and forbidden to play if he is not able. The coach should be given this information at the earliest possible moment. In carrying out our policy, we have no desire to invade the field of medicine beyond the bounds of urgent athletic necessity. If a boy has a serious injury, such as a broken arm or leg, our coaches bar him on the spot. We have a doctor in attendance at each game to advise the coach and give first aid. If the injury is of a less evident nature, and the matter has not been attended to by the family or the family doctor so that the coach knows where he stands, then he appeals to our medical department for a verdict. This procedure led us to x-ray many insignificant injuries in order to give an exact and just answer. In doing this we have come to the conclusion that every moderately severe strain of a foot, ankle, lower leg, finger, hand, wrist or forearm may be, and often is, a fracture.

We present the following case histories.

Case Reports

Case 1.—R. A. of P. H. High School was sent to us on November 5 at the close of the football season and at the opening of the basketball season. His coach requested that we look at his right hand. He stated that he had hurt it early in September and had had trouble with it all season, not enough however to have it looked at by a doctor. An x-ray revealed a transverse fracture of the distal end of the fifth right metacarpal bone.

Case 2.—N. S. of P. H. High School was sent in by the same coach along with Case 1 to have his right hand looked at. He gave a history of having hurt his right hand in September, or early in the football season, at about the same time his teammate above was injured. Like his teammate he had played football all season and had not sought medical advice or care previous to this time. An x-ray revealed an oblique fracture of the fourth metacarpal bone extending the full length of the bone.

Case 3.—B. H. of P. H. High School, was sent in with Case 1 and Case 2 with a history practically identical with theirs. He had hurt his left hand early in the season. An x-ray of the left little finger showed an oblique fracture of the proximal phalanx extending through nearly the entire length of the bone. He, like the other two boys, had continued to play out the season when he could get into the game.



Fig. 4. X-ray in Case 4 showing an oblique fracture of the proximal phalanx of the left middle toe.



Fig. 5. X-ray in Case 5 showing an oblique fracture of the proximal phalanx of the left little toe.

Case 4.—A. P. of R. High School was sent in by his coach with a history of having hurt his left foot two weeks earlier while doing a giant roll on the parallel bars. He had sought no medical advice previous to the time we saw him. An x-ray showed an oblique fracture of the proximal phalanx of the left middle toe.

Case 5.—A. H. of E. High School was sent in by his coach two weeks after injury. He had received no medical care before coming in. An x-ray showed an oblique fracture of the proximal phalanx of the left little toe.

Case 6.—A student in R. High School was sent in two weeks after injury. He had sought no medical advice. An x-ray showed a greenstick fracture of the fourth right metastarsal bone.

Case 7.—G. C. of W. High School was sent in by his coach for an injury sustained four days earlier while boxing. He had had no medical care before coming in. An x-ray showed an impacted fracture of the proximal end of the left first metacarpal bone.

Case 8.—A student of S. High School was sent in a week after injury complaining of a strained thumb. An x-ray showed a transverse impacted fracture of the right thumb.

Case 9.—R. K. of S. High School was sent in by his coach to see why he could not hold a football while playing at the quarterback position. He gave a history of having hurt his left hand in a game on October 9. He came to us on October 19, having had no previous medical care. An x-ray revealed an oblique fracture of both the fourth and fifth left metacarpal bones.

Case 10.—S. C. of P. H. High School was sent in by his coach on October 21 with a history of injury to his right hand five days earlier in a regularly scheduled football game. An x-ray showed an impacted fracture of the proximal end of the first phalanx of the right hand. He had had no previous medical care.

Case 11.—J. K. of N. High School was sent in by his coach for a strained ankle. An x-ray revealed a previous fracture of the medial malleolus of the left tibia of two years' standing, with very poor or no union at all. He had not revealed this condition to us and had played until an injury occurred which the coach was now checking up on.

Case 12.—Z. S. of N. High School was sent in by his coach for a Charley horse sustained three days earlier. He gave a history of having been kneed in a football game. He had had no previous medical care. An x-ray showed an oblique fracture of the left fibula, at the junction of the upper and middle thirds.

Case 13.—W. J. of P. H. High School was sent in by his coach complaining of a pulled muscle in his left lower leg. He came in on September 18 and dated his injury as of September 6, twelve days earlier. An x-ray revealed a transverse fracture of the left fibula at the junction of the upper and middle thirds. This boy had been raring to get into the game every time the coach would use him.



Fig. 6. X-ray in Case 9 showing oblique fractures of the fourth and fifth left metacarpal bones.



Fig. 7. X-ray in Case 11 showing a fracture of the medical malleolus of the left tibia of two years' standing.



Fig. 8. X-ray in Case 13 showing a transverse fracture of the left fibula.

Case 14.—K. R., a supervisor of Minneapolis Public Play Grounds. We present this case not because it is a high school athletic injury, or because we wish to escape the unlucky number 13. We present it because it shows what an athletic coach may run into in handling these cases. It shows that the wisest of us slip up now and then. We did not dig this case out of our files. He came in while we were working up this article, and we decided to present his case with the others.

This man has been engaged in athletics and athletic activity as a life work. He graduated from the Springfield Training School of Springfield, Massachusetts, and immediately entered playground work where he spent forty years. He has spent his whole life in contact with boys at the High School level.

During the first snowstorm of the winter his car got stuck, and a small tractor was called out to pull him back on the road. He stated that he got too close to the tractor and it nudged his left lower leg and foot. He was not clear just how it happened, but he sustained a strained left ankle. Over a month later his ankle continued to swell. He came in to see why he was so slow in recovering. An x-ray showed a fracture of both the tibia and the fibula at the ankle joint, each distal fragment being from ½ to 1 centimeter in size. He had had no medical advice or care before coming to us.

We have seen many more of these cases, but presenting them would only be a repetition of those here shown. We have not included any cases where a fracture was expected before an X-ray was taken. We have tried in all cases to make a diagnosis before x-ray was used, but found no way of being even nearly certain. Many cases where symptoms almost certainly indicated that a fracture was present were found on x-ray to be only severe strains. On the other hand, the symptoms in many cases were so mild that a fracture was considered almost certainly not present, but was found on x-ray. We were not able to differentiate between a strain and a fracture except by x-ray. Histories in these cases were usually useless, especially in football where the pitch of excitement is so high that the boy is not able to tell how and when he got hurt.

Conclusions

1. Every strain is a possible fracture.
2. A definite diagnosis can be made only by x-ray.
3. Many fractures sustained in athletics are never diagnosed.
4. Football is the outstanding producer of fractures in high school sports.
5. Most unrecognized fractures in high school athletes occur in the hands, wrists, forearms, feet, ankles, and lower legs.
6. It is the duty of the athletic department in high schools to make an all-out effort to keep boys with recent fractures out of competition until the fracture is well healed.

Discussion

JOHN C. WELLS, assistant director in charge of interschool athletics, Minneapolis Public Schools, Minneap-

olis: The Minneapolis public school athletic program involves competition in twelve sports by several thousand boys. We try in every way possible to give thorough medical examination, competent coaching, standard equipment, adequate supervision, good officiating and proper care of injuries as they occur. In spite of many precautions, our experience shows that many so-called unimportant bumps and bruises have turned out to be fractures, and we have labeled these "unrecognized fractures."

Our athletic injury problem must of necessity be a large one in Minneapolis. We have eleven senior high schools which compete more or less in a round robin in twelve different sports. We have examined 2,382 boys for athletic competition in the fall quarter of the present year. Our top school had 512 boys certified for athletics in the last three months of 1947. About half of these boys sustain some bumps, bruises or strains of varying degrees of severity. Most of the serious injuries are taken care of by the family doctor. Many are seen by the team or game physician. Some are sent by the coach to our medical officer. Many are taken care of by the coach or team trainer. It is probable, we are sorry to say, that some are not attended to by anyone.

We believe that no athlete should be permitted to participate in athletics unless he is registered in the Minnesota State High School League Accident Benefit Plan. This insures a medical examination and some coverage for medical expenses in case of injury. Many times injuries are belittled because of possible expenses involved in medical examination and treatment. If boys are registered under the plan, there is little excuse for neglecting these injuries, as a liberal allowance is provided for sprains and x-ray.

Dr. W. K. Foster, our athletic medical adviser, has made a report of these injuries, and it is our hope that others who deal with athletic injuries may profit from our experience.

Frank Cleve, coach at Patrick Henry High School, Minneapolis: Most coaches of high school teams have a general idea of injuries. Those that have majors in physical education also have studied the anatomy and physiology of the human body.

I believe that the majority of coaches will not play nor contact-scrimmage a boy who is injured to the extent where it may be more injurious to this boy. However, many injuries are not serious enough to keep a boy from playing. Many boys are slightly injured and do not report this to the coach or manager. Also, many minor ailments are not thought serious enough to keep a boy out of practice. I am thinking of normal bumps and bruises, also slight strains and sprains.

The equipment and care of injuries in most high schools is very limited and inadequate, and most minor ailments are treated at home. Sometimes these treatments do not show proper improvement, but the boy does not complain or report any pain to the coach.

After a reasonable length of time, the injury may not heal properly and the boy may casually mention it to the coach, if he has not known about it before. Coaches then send the boy for medical treatment and x-ray. Some of these cases prove to be fractures rather than sprains.

Before each season a medical examination by a doctor is required. Why not the same after a football season? My face was very red when I sent three boys to be examined with finger injuries and all three proved to be fractures.

Conclusions

1. Treat all injuries as serious, until proven otherwise.
2. Recheck injuries and, where proper improvement is not shown, provide medical treatment and x-ray if necessary.
3. Provide a physical examination at the end of football season by a physician.

Dr. William E. Proffitt, formerly of the University of Minnesota football, basketball and boxing teams: I am very glad that Dr. Foster and Mr. Wells have invited me to discuss this subject. It represents a field of special interest to me, in that it ties together my previous athletic career and my present one in medicine and its application to the High School Athletic Program.

I feel very strongly about the points brought forth in the discussion because these boys in high school athletics have, in reality, the greater portion, not only of their life, but also of their athletic career, ahead of them. Also any injury they receive may be permanently hindering to their earning power in later years. I cannot see how anyone dealing with the health and safety of these young athletes can ignore "a sprain or strain" without an x-ray. I, for one, cannot see through the skin, muscles, et cetera as well as the x-ray can, and so I let the x-ray make my decision for me in all cases where an injury is incurred.

The present system of insurance as carried by the Minnesota State High School League, and very ably administered by Mr. Harold Peterson, is an excellent one. It protects the boy, the school, the system, and the doctor. Certainly there are some defects which, in time, can be remedied: The present red tape puts the burden of proof of injury, seeing that proper forms are obtained, filled out, and returned to the school involved, and the burden of treatment, all upon the doctor—all this within a short span of time. How much simpler and more to the point it would be to have the doctor have the necessary insurance blanks in his office, fill them out on the day of treatment, and send them in immediately to the State High School League, and have disposition made. Or the boy injured could bring the blanks with him on the first visit. I know that there would be much less confusion if this were done.

From my connections with athletics as a player and now as a doctor, I certainly thoroughly agree that even apparently minor injuries can be serious enough to need treatment, and that many fractures are undiagnosed. I am sure that Dr. Foster and Mr. Wells will be successful in their crusade to improve the quality of medical service given to these boys in high school athletics and still get them well rapidly enough not to lose too much time from their competition. This is, and I mean it, all-important to the participating athlete.

TRACHEOTOMY: INDICATIONS AND TECHNIQUE

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Indications

TRACHEOTOMY is indicated whenever one can be sure that the laryngeal airway is markedly obstructed and will not be reopened spontaneously if the disease is allowed to take its course (e.g., injuries and inflammation of larynx).

Tracheotomy is sometimes indicated in the absence of laryngeal obstruction when it is necessary to remove foreign material from the trachea or bronchi (e.g., vegetable foreign bodies, food and pharyngeal secretions in certain cases of bulbar poliomyelitis).

Good surgical judgment is necessary to decide whether tracheotomy needs to be done. In croup, the decision is difficult. In the cases seen early in one's experience, one is likely to be hasty about doing tracheotomy. The parents want the child treated in the safest manner, and one sometimes is hard put to know whether to operate or not.

If a child's color is reasonably good, although signs of narrowing of the laryngeal airway are present, the most important single index of danger is an increasing pulse rate. The pulse should be recorded frequently (every ten to thirty minutes). If the rate consistently rises, an impending circulatory failure is presaged, and tracheotomy should not be delayed.

The following complete list of indications is given by Thomson and Negus:

1. Injuries to the larynx—wounds and fractures of the laryngeal cartilages.
2. The extraction of foreign bodies when these are impacted in the larynx, or cannot be removed from the trachea or bronchi by the endolaryngeal route. The indication applies almost entirely to vegetable foreign bodies, which are liable to produce edematous swelling around the glottis.
3. Stenosis of the larynx or trachea,
   (a) External compression: goiter, aneurysm, mediastinal growths.
   (b) Internal constriction: inflammatory swelling, tuberculosis, syphilis, diphtheria, scleroma, neoplasms (carcinoma, papiloma, etc.).
   (c) Cicatricial narrowing, after healing of ulcers (syphilitic, typhoid, etc.) or operative measures.
   (d) Congenital webs in the larynx.
   (e) Double abductor paralysis.
4. (a) As a preliminary procedure to operations on the upper air passages, so as to prevent (by a tampon cannula or by plugging the larynx) the descent of blood into the bronchi. (b) Following these operations, to supply air to the patient.
5. In asphyxia, to allow artificial respiration.

Indications in Bulbar Poliomyelitis

In addition to the indications given by Thomson and Negus, as listed above, I wish to add those which resulted from our experiences in treating bulbar poliomyelitis patients during the Minneapolis epidemic of 1946. It was the opinion of the group involved that certain indications for tracheotomy exist in bulbar poliomyelitis patients. They may be summarized as follows:

In any patient whose bulbar symptoms are early and whose disease is progressing rapidly or who has evidence of involvement of the circulatory or respiratory centers or who has severe toxicity or mental changes, tracheotomy is indicated. In the patient whose bulbar poliomyelitis was severe enough so that the pharyngeal paralysis permitted spillage of secretion into the larynx and trachea, we advised tracheotomy only when the patient could not clear his own airway or when his airway could not be cleared for him by pharyngeal aspiration and postural drainage.

Inability of the patient to clear his own airway was indicated by recurrent cyanosis, coarse bubbling rales in the chest, laryngeal stridor and inability to cough efficiently. These symptoms are most important in excited patients who are unmanageable and in stuporous patients who are oblivious to the secretion running into their respiratory tree. Direct laryngoscopy may demonstrate pooling of mucus in the pharynx, paralysis of one or both cords, and diminished tactile sensitivity of the laryngeal mucosa.

The use of the respirator in bulbar poliomyelitis patients constitutes a further indication for tracheotomy. It has been the opinion of various authorities that the respirator is contra-indicated in bulbar poliomyelitis because the machine may

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suck pharyngeal secretion down into the lower respiratory tract. Tracheotomy was used in several of our cases to permit aspiration of this material from the trachea and bronchi.

Types of Tracheotomy

Emergency.—Two emergency operations will be described. Both open the airway. One is actually a form of laryngotomy, and the other is a true tracheotomy.

1. *Laryngotomy, Intercricothyrotomy. — This operation has been condemned and with justification.* On the other hand, it may be life saving and there are certainly times when it is necessary. Its limitations must be understood.

A temporary opening into the airway is made by making a transverse incision through the cricothyroid membrane across the midline. The opening is maintained by improvised retractors (hairpins, etc.) only until a real tracheotomy can be done. Then the cricothyroid incision can be allowed to close

Continued use of this opening into the airway is wrong. The cannula will cause atrophy of the cricoid cartilage and make decannulation difficult by allowing the airway to collapse and by formation of scars within the larynx due to trauma.

2. *Emergency Tracheotomy.*—This procedure has been described so well by Dr. Chevalier Jackson that his description is quoted here:

Step 1. Throwing the trachea into prominence and fixing it in the midline are accomplished by pushing back the great vessels well under the sternomasted muscles. This is done in a second or two with the thumb and index finger of the left hand.

Step 2. Initial Incision.—With one sweep of the scalpel an incision is made from Adams apple almost to the suprasternal notch. This incision must go clear through the skin to facilitate free finger dissection. There may be considerable flow of blood but nothing immediately dangerous.

Step 3. Finger Dissection to Find the Trachea.—While the left thumb and middle finger are still holding back the great vessels under the sternomastoids the previously idle left index finger quickly locates the trachea by following downward from Adam's apple. The trachea is infallibly identified by the rigid character of its walls; there is nothing like it in that region. Every medical student has learned, or should have learned, the feel of it in the dissecting room. In identifying the trachea the finger at the same time bares its midline of tissue below the cricoid, by pushing the finger down under any overlying tissue; if the isthmus of the thyroid gland intervenes it is pushed downward and elevated. If it is torn or cut it will not matter. If an anomalous artery is felt crossing the trachea at this point it is pushed downward.

Step 4. Tracheal Incision.—The trachea having been identified and bared of tissue, the tip of the index finger is slid slightly to the operator's left side so that the scalpel in the right hand can be safely guided down along the palmar surface of the index finger onto the tracheal wall. Two or three rings are incised. In making the incision the middle finger of the right hand makes a guard against deep entrance of the knife that might otherwise go through the posterior tracheal wall into the esophagus.

Step 5. Holding Apart the Lips of the Tracheal Incision.—There is usually a hiss if the patient is breathing, but the lips of the tracheal incision in most cases lie so closely in contact that insufficient air is permitted to pass. The lips should be spread apart with a Trousseau dilator; if none is available a hemostat will do. Lacking these, the handle of the scalpel may be inserted in the slit and rotated slightly to cause gaping. Of course some blood will trickle into the trachea but cough will quickly expel it and spray it about. The cannula is inserted with its pilot; the pilot is removed if not blown out by the tussive blast. If by reason of deplorable lack of equipment no cannula is available someone must hold the lip of the tracheal incision apart until a cannula can be obtained or a makeshift devised for temporary use.

Step 6. Artificial respiration must be done if there has been respiratory arrest. Oxygen mixed with 7 per cent carbon dioxide should be liberated at the tracheal opening or gently insufflated through a catheter. The best cardiac stimulant is to get oxygen into the heart muscle by way of the circulating blood. No drug is a substitute for this.

Step 7. Hemostasis.—As soon as respiration is established hemostasis may be done in the usual way. If artificial respiration is necessary, temporary hemostasis may be afforded by packing gauze firmly into the wound and around the cannula.

Orderly or Tranquil Tracheotomy.—Conditions for orderly tracheotomy can be created by inserting a bronchoscope, Mosher life-saving tube, or endotracheal anesthesia tube through the stenotic larynx to provide a temporary airway. This airway is maintained by an assistant during the time tracheotomy is being carried out.

Technique.—Anesthesia for tracheotomy should almost always be local. In the hands of the occasional surgeon the rule should be that anesthesia ought always to be local. In rare instances where the tracheotomy is purely elective and when intratracheal anesthesia is available, general anesthesia may be properly considered.

At the University of Minnesota, our usual anesthetic is 1 per cent procaine with epinephrine infiltrated in the midline from the suprasternal notch to the thyroid notch. A rhomboid of injected anesthesia can be made to surround the field with no solution being injected in the midline. We have not used this method.

A midline incision is made from the thyroid notch above to the suprasternal notch below. The knife is carried through the skin and superficial fascia. Bleeding vessels are clamped. Tying may be deferred until just prior to opening the trachea.

Often cocaine is injected into the tracheal lumen just before the tracheal wall is incised The few moments necessary to allow it to produce anesthesia may be used to tie any skin bleeders still in need of ligature.

The midline incision is carried through the deep fascia. If the thyroid isthmus is broad and lies over the trachea where the tube is to be inserted, the isthmus should be divided and retracted to the sides. The division is carried out by dissecting the thyroid isthmus off the front of the trachea, clamping it and cutting between clamps. A running suture of fine plain catgut or silk is placed in each cut edge of the thyroid to control bleeding before the clamps are removed. Any large veins which interfere with proper placement of the tube are ligated and divided.

Some authors (Waldapfel) advocate a transverse incision of the fascia above the thyroid isthmus to free the isthmus, which may then be retracted downward and the tube properly placed without incision of the isthmus. No harm is done by division of the thyroid isthmus and the essential object is proper placement of the tracheotomy tube. At the University of Minnesota, we have practiced division of the thyroid isthmus whenever necessary.

After division of the thyroid isthmus, the tracheal rings can be seen through the thin fascia overlying them. The operator should reorient himself at this time. He should palpate the cricoid cartilage in the midline anteriorly and should count down to the third tracheal ring. *If there is any doubt in the operator's mind as to exactly where he should incise the trachea, he should take time to find out before he opens the trachea.* There is no more miserable or difficult problem than that of difficult decannulation, and this problem can only be avoided if the incision in the trachea is properly placed.

One or two cubic centimeters of 2 to 4 per cent cocaine solution are injected into the lumen of the trachea a few minutes before the incision into the tracheal wall is made. This makes the actual opening of the trachea quite a tranquil procedure, with little coughing and struggling on the part of the patient.

It has been our practice at the University of Minnesota to perform the punch operation of Mosher. A midline incision is made through the second, third or fourth rings, depending upon the accessibility of the trachea. An Allis forceps is then used to seize the tracheal cartilage through the incision, and a semilunar piece is removed from the anterior tracheal wall on the right and left sides of the incision. Mosher originally used a ring punch to remove the button of cartilage. Removal of a circular piece of the anterior tracheal wall permits easy insertion of tracheal cannulæ and prevents deformity of the tracheal cartilages by pressure from the cannula. The circular "button" or cartilage thus removed is about the size of the tracheotomy tube to be inserted. Another type of punch has been described by Waldapfel for removing this tissue, but we have had no experience with it. Before the trachea is opened a soft rubber urethral catheter is attached to the suction apparatus. This catheter is inserted into the trachea to aspirate blood or secretions.

The tracheotomy wound is not closed, and the only dressing applied is the gauze squares cut or perforated and placed around the tracheotomy tube. A tube is selected according to the patient's age and is inserted to a distance just proper to allow free breathing without danger of being dislodged. Care is taken not to allow a long tube to impinge on the anterior tracheal wall and thus produce cough, granulations or bleeding.

We have used the Jackson tubes made by Pilling exclusively because of their availability, proper curvature and generally satisfactory design.

The tape around the patient's neck is tied in a square knot (not a bow knot) and is preferably tied on one side rather than behind where the knot causes discomfort as the patient lies on his back.

Errors and Accidents Accompanying Tracheotomy

1. Too short an incision prolongs the operation and makes it more difficult. The incision is inconspicuous after it heals in most cases. Cosmetic surgery and safe surgery are not always compatible. The longer incision certainly makes tracheotomy safer by bringing all parts of the operative field into clear view.

2. After incision of skin and superficial fascia the next layer may not be separated in the midline and the operator may become disoriented.

3. The dome of the pleura may be punctured

as it bulges up into the wound, and pneumothorax may be induced.

4. The knife used to incise the trachea may be carried through the posterior wall of the trachea into the esophagus.

5. The cannula may fail to enter the tracheal lumen and may make a false passage outside the trachea. This is not as apt to occur if a "button" of the tracheal wall has been removed as described in the section on operative technique (Mosher's punch operation).

6. The operator may fail to identify the cricoid cartilage before he opens the trachea. This may lead to division of the cricoid and subsequently to laryngeal stenosis.

7. An improperly fitted tube causes erosion of structures pressed upon and may lead to various undesirable complications.

8. Entrance of blood into the trachea can be prevented by proper hemostasis unless there is urgent need for opening the trachea. If dyspnea is marked a small amount of bleeding can be ignored and the patient turned after insertion of the cannula so that the blood will not run into the trachea. The bleeding can be controlled later if it does not stop spontaneously.

Postoperative Complications

1. Emphysema of subcutaneous and fascial layers of neck occurs when air is forced into the tissues through the tracheotomy wound. Suturing of the wound favors the production of emphysema. Packing of the wound with vaseline gauze decreases the ease with which air is forced into the tissues. Some surgeons impregnate this gauze with sufonamide drugs.

Emphysema of the mediastinum has occurred in several of our cases at Minnesota but no serious result has ensued. Pneumothorax may follow emphysema of the mediastinum or may be produced by puncturing the dome of the pleura as it projects up into the neck wound. This complication is serious and must be dealt with by physicians accustomed to handling pneumothorax. Unless the pneumothorax is bilateral it usually is not a fatal complication.

2. Blood in the mediastinum was found at autopsy in one case but it was not definitely established that this was not a postmortem artifact.

3. Laryngeal or tracheal stenosis need not follow properly done tracheotomy.

4. Wound infections are rare particularly since antibiotic therapy and chemotherapy have been available.

5. Tracheitis usually follows tracheotomy. This is transitory. Excessive tracheal secretion is produced for a few days but after a week or ten days this decreases markedly.

Postoperative Care

Dr. Chevalier Jackson has emphasized in his writings that tracheotomy is not an object in itself. It is done to permit the patient to get air into his lungs. All the aftercare is directed at keeping the tracheotomy tube open and the wound clean.

When the patient goes to his room from the operating room, an exact duplicate of his tracheotomy tube is sent with him. It is most important that this tube be supplied with its own inner tube and obturator. Obturators and inner tubes usually fit only their own outer cannula. Lack of a proper obturator may be a very serious matter, if it delays changing of a tracheotomy tube. The extra tube is kept sterile on a tray with supplies for instant changing of the tracheotomy tube in case of emergency.

In addition to the tray containing the extra tube and its supplies, a general utility tray is provided. This holds the solution and materials for cleaning the inner cannula, as well as the suction tubing. The use of this tray will be discussed below.

Upon his return from the operating room, the patient is placed in a bed with the head elevated. The pillow is rubber covered. Water or portable machine suction is in the room at all times. The suction is so placed as to be instantly available for use in tracheal aspiration. The rubber catheter is always connected to the suction tube.

When the air of the patient's room is dry, it must be moistened to aid in the liquefaction of tracheal and bronchial secretions. Various methods of humidification have been employed. These include:

1. The patient's bedroom is rendered moist by cold humidifiers which spray a fine mist into the air by a centrifugal action.

2. A nebulizer may be connected to the tracheotomy tube and forcing of air or oxygen through the nebulizer from a tank of compressed gas, as described by Albers.

3. A centrifugal cold humidifier may be connected to an oxygen tent as advocated by Davison.

4. An atomizer spraying into an oxygen tent as described by Platou.

5. A moistened gauze sponge may be placed over the tracheotomy tube and may be replaced frequently.

6. Instillation of normal saline into the tracheotomy tube with a dropper. Proper precautions to prevent breakage of the dropper and entrance of glass into the trachea must be taken. The use of a short piece of rubber catheter on the end of the dropper minimizes the danger of glass fragments entering the trachea.

The patient is closely watched for hemorrhage and for closure of his tube by secretions or blood. The inner tube is suctioned frequently. When the rubber catheter is introduced into the tracheal cannula, the catheter is pinched shut until it has been inserted as far as necessary. This prevents the tip of the catheter from engaging the tracheal wall, or other tissue during introduction. Some surgeons instill normal saline into the trachea before tracheal aspiration is done. The saline loosens crusts and dilutes thick secretions. Some surgeons limit the extent to which the catheter can be inserted by the nurse by wrapping a collar of adhesive tape around it.

The inner cannula is changed every two to four hours, as ordered by the surgeon. It should not be left out of place for more than ten minutes at the longest. The outer tube is thoroughly sucked out before the inner tube is replaced. If this is not done, accumulated secretion is pushed into the trachea by the inner tube as it is introduced. The inner tube is cleaned by pushing a pipe cleaner through it. To clean an inner tube properly with an ordinary applicator is impossible.

The outer tube and the dressings are usually changed daily by the doctor, but some physicians change the outer tube at longer intervals.

CLEANSING OF TRACHEOTOMY TUBE

1. Rinse thoroughly with cold water.
2. Soak in sodium bicarbonate solution for one or two hours.
3. Cleanse, using special curved brush. These brushes come in various sizes. They may be obtained from the Pilling Company in Philadelphia.
4. Put on tie straps and boil for ten or fifteen minutes. Wrap with sterile towel and leave in patient's room at all times.

SPECIAL INSTRUCTIONS FOR NURSE IN IMMEDIATE CHARGE OF PATIENT

(Modified from Chevalier Jackson)

1. Read carefully all of above material pertaining to aftercare.
2. Wipe away secretions before they are drawn in by inspiration.
3. A patient with a properly fitting cannula free of secretions breathes quietly and noiselessly. Any sound demands immediate attention. Listen with ear close to cannula.
4. A patient with a tracheotomy tube often has no voice and cannot call for help.
5. Watch for loose parts on the cannula.
6. Watch color of lips, ears and face.
7. Report immediately if food or drink leaks through wound.
8. Never leave patient unwatched.
9. Remember that life depends on an open cannula if no air comes through the mouth or nose.
10. A baby's small cannula is plugged by only a little secretion.
11. Don't wear small children out by too much nursing care.

INSTRUMENTS NECESSARY FOR EMERGENCY TRACHEOTOMY

1 Scalpel, ordinary and pointed.
blades (Bard-Parker No. 10 and 11).
6 Hemostats.
1 Tracheal hook and spreader.
2 Allis forceps.
1 Tissue forceps (with teeth).
1 Dissecting scissors.
1 Suture scissors.
2 Small ribbon or rake retractors.
2 Suction tips—one metal and one rubber catheter about No. 12F.
1 5 c.c. syringe and needle for local anesthesia.
1 2 c.c. syringe and hypo needle for injection of cocaine into trachea.
1 Needle holder.
Needles.
Plain 000 tie.
Medicine glasses.
Gauze sponges.
Tracheotomy tubes—provide duplicates of size selected by surgeon.

SUPPLIES TO BE KEPT ON TRAY WITH TUBE IN PATIENT'S ROOM

Scissors for cutting gauze.
4–2 inch or 2.5 inch gauze squares.
Basin for saline used to clean wound.
Duplicate of tracheotomy tube worn by patient, complete with inner tube, obturator, and tape to tie around neck.

MATERIAL TO BE KEPT ON UTILITY TRAY

Basin holding about 250 c.c. 5 per cent sodium bicarbonate solution for washing inner and outer cannulæ.
Basin containing about 250 c.c. normal saline solution and two or three 2-inch gauze squares.
2 Robinson two-hole catheters (No. 14 and No. 16F), with ends cut off square and made smooth.
2 Old hemostats—general utility.
Emesis basin.

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FUNDAMENTAL AND CLINICAL ASPECTS OF PULMONARY HYPERTENSION

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COURNAND and his co-workers, in 1941, developed the technique of venous catheterization of the right ventricle of the heart,[2] originally described by Forssmann,[7] to the point where it was adopted in many centers as a safe and important procedure for the investigation of circulatory dynamics in the intact human subject. The use of the Hamilton manometer in 1944 to record pressures optically through the catheter,[3] and the subsequent demonstration by Dexter that the pulmonary artery could be entered with safety and ease,[4] has permitted the accurate measurement of pulmonary arterial pressure in man.

A radio-opaque catheter is inserted into the median basilic vein of the arm and passed under direct fluoroscopic vision into the right atrium, right ventricle, and pulmonary artery. The catheter is kept patent with a slow continuous saline drip, to which it is connected by a three-way stopcock. The Hamilton manometer, which is connected to the catheter at the three-way stopcock by a short piece of lead tubing, is a rigid brass tube filled with air-free distilled water and closed at one end by an elastic metal membrane.[8] An attached mirror reflects a vertical light beam onto a recording camera. Pressure changes within the system cause slight motion of the membrane, attached mirror, and reflected light beam producing a pressure curve when photographed. The system is calibrated with an ordinary mercury manometer. Pressures are recorded at multiple points in the pulmonary artery, right ventricle, and right auricle as the catheter is slowly withdrawn. A respiratory tracing and one lead of the electrocardiogram are recorded simultaneously.

Though requiring special equipment and a trained team of three or four workers, the details of the technique are easily mastered with careful practice. The procedure is entirely safe in normal subjects and in selected patients with heart disease. Severe coronary artery disease, myocardial infarction, pulmonary infarction, and chronic or serious disturbances of rhythm are contraindications to the procedure. There is danger of air embolism in congenital cardiac defects with a shunt of blood from the right to the left ventricle of the heart, although small amounts of air entering the right ventricle from the saline drip are relatively innocuous if no shunt from the right ventricle to the systemic circulation exists. Patients undergoing venous catheterization experience no pain or undue discomfort. Local novocaine infiltration at the site of the skin incision over the antecubital vein employed for catheterization is the only anesthetic agent needed.

The systolic pressure is measured on the ventricular pulse curve to avoid artefacts which frequently occur in the pulmonary arterial curve due to "whip" of the catheter induced by ventricular ejection. The diastolic pressure in the pulmonary artery is measured on the pulmonary arterial curve at a point corresponding to the end of ventricular diastasis which is usually synchronous with the P wave of the electrocardiogram. Pressures are measured through a complete respiratory cycle from the peak of one inspiration to the peak of the next inspiration to take into account respiratory variation.

In twelve normal subjects, the average pressure in the pulmonary artery was 20.1 ± 3.7 mm. Hg. systolic and 8.8 ± 1.2 mm. Hg. diastolic with a normal range of from 11 to 26 mm. Hg. systolic and 5 to 11 mm. Hg. diastolic, respectively.[6] Pressures are relatively constant in any one individual and the normal range for the group is narrow. Factors, such as anxiety and exercise, which can greatly increase pulmonary blood flow, have little or no influence on the pulmonary arterial pressure in normal subjects. On the other hand, Hickam and Cargill[9] have recently shown that patients with congestive heart failure cannot increase their blood flow in response to exercise. The pulmonary arterial pressure in such patients is elevated at rest and shows a further marked elevation during exercise.

The following six disease states are implicated in the pathogenesis of pulmonary hypertension:

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1. Mitral stenosis and/or insufficiency.
2. Left ventricular failure from any cause.
3. Congenital cardiac defects where the shunt of blood is from left to right, particularly patent ductus arteriosus and interauricular septal defect, and occasionally Roger's disease. Eisenmenger's complex is also implicated.
4. Pericarditis, whether due to acute pericardial effusion or chronic constrictive pericarditis.
5. Certain cases of pulmonary emphysema.
6. Primary pulmonary arteriosclerosis.

In patients with mitral stenosis and dyspnea on exertion but without hepatomegalia or peripheral edema, there is a direct correlation between the degree of disability and the development of pulmonary hypertension. Patients with the findings of mitral stenosis who are asymptomatic have little or no elevation of pressure in the pulmonary artery, whereas patients with the symptoms of advanced mitral stenosis show elevations of pressure which can approximate or equal systemic arterial pressure. Such an elevation of pressure in the pulmonary artery carries a poor prognosis.

Patients with left ventricular failure due to hypertensive heart disease or aortic valvular disease show mild to moderate elevation of pressure in the pulmonary artery. There is no correlation between the degree of disability and the degree of pulmonary hypertension in left ventricular failure.

There is evidence to indicate that moderate or severe pulmonary hypertension is due in large part to increased resistance to flow through the pulmonary vascular bed and is not due entirely to back pressure from the left auricle. This is particularly true in mitral stenosis.

Excluding technical errors, a narrow pulse pressure in the pulmonary artery, with a systolic pressure which is distinctly lower than that in the right ventricle, is diagnostic of pulmonic stenosis.[5] The accurate diagnosis of pulmonic stenosis is of practical value in that it distinguishes the tetralogy of Fallot from Eisenmenger's complex. Such a distinction is obviously crucial in the proper selection of patients for the Blalock operation.[1]

Summary

1. The method of determining the pressure in the pulmonary artery has been briefly described.
2. The normal average value for the pulmonary arterial pressure has been defined as 20/9 mm. Hg.
3. The six disease states implicated in the pathogenesis of pulmonary hypertension have been listed.
4. The degree of pulmonary hypertension is an objective measure of the disability in mitral disease and is of value in prognosis.
5. The determination of pulmonary pressure is of practical value in congenital heart disease when the accurate diagnosis of pulmonic stenosis aids in the selection of patients for cardiac surgery.

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In the treatment of pulmonary tuberculosis, complete bed rest is the foundation upon which the physician builds. In addition to this, collapse therapy of various kinds is used to provide local rest to some portions of the lung to initiate healing of the diseased process, to correct an unfavorable mechanical situation such as the presence of a cavity in the lung parenchyma, or to speed up the healing process. With the addition of collapse therapy, one may shorten the time of complete bed rest, allowing the patient to be ambulatory and return to a productive occupation at an earlier date.—Harold Guyon Trimble, M.D., *Am. Rev. Tuberc.*, May, 1948.

DISTURBANCES OF THE NAILS PRODUCED BY BASE COATS

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WITHIN the past few months physicians have observed a new disorder of the nails produced by base coats. There are several brands which are appiled directly to the nails beneath ordinary nail polish to prevent the latter from chipping and to reduce the frequency of application. Base coats have been on the market for several years, and in 1947 new formulas were introduced. Our attention was first called to reactions to the new base coats at a meeting of the Chicago Dermatological Society in March, 1948. Subsequently, at a meeting of the American Dermatological Association in April, 1948, the question of these peculiar changes was again considered. It was apparent that cases were being observed in various parts of the country. Positive patch tests were obtained in individuals so affected. Since these cases may be confused with psoriasis or mycotic infections of the nails, we thought that it would be of value to call the disorder to the attention of physicians in order that it might be recognized and these patients advised to discontinue the use of base coats.

Clinical Features

The clinical features of the changes produced by base coats are pathognomonic even though they vary in severity. One of the most striking changes is the discoloration, which may vary from magenta to different shades of brown. Generally the distal half is affected—occasionally the entire nail. The normal translucency is usually lost, although in two cases there was a waxy appearance. In most cases which we have seen, all of the fingernails have been involved, some more intensely than others. In addition to the discoloration, the nails are much drier than normal; they become brittle, and some present longitudinal striations. Onychauxis was observed in one patient. Another important feature is the deposition of hyperkeratotic material beneath the nail which leads to varying degrees of onycholysis. In most cases the latter is only partial and the nails are usually not shed, although they may become loosened. We saw one patient, however, in whom three finger nails were completely lost. We observed paronychia in one instance accompanied by pain, a feeling of numbness and diminution of the tactile sense.

Most cases which have been observed by physicians who are not acquainted with this disorder have been diagnosed psoriasis or onychomycosis. Although psoriasis of the nails may occur alone, it is most unusual, and concomitant lesions elsewhere on the body aid greatly in making a correct diagnosis. We have not observed the characteristic stippling in this disorder which is perhaps the most important characteristic of psoriasis of the nails. Neither have we seen the discoloration in psoriasis which is present in this disease.

Onychomycosis is characterized by a yellowish discoloration rather than the reddish-brown color present in this disorder. There may be loss of luster in both diseases. In mycotic infections, however, the nails as a rule become soft and crumbly, while in this disease they are hard, dry and brittle. In monilial infections, paronychia is a common complication, but it is apparently an unusual manifestation of disturbances produced by base coats. Culture of the involved nails aids in differential diagnosis.

Apparently the time required to produce changes in the nails by base coats varies greatly in different individuals. Most women who present these changes are unable to give an accurate history of onset because the manicurist applied colored enamel before the patient had a chance to examine the nails. Most of the patients whom we questioned stated that the base coat was used for several weeks or months before the discoloration was noted. It is our impression that once the process starts, progression is rapid. There has not been sufficient observation to formulate an exact prognosis, and undoubtedly the time required for the nails to return to normal depends to a great extent upon the amount of change produced before the base coat is discontinued. In one patient under our care, in whom only the distal halves of the

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Fig. 1. Discoloration of nails without onycholysis.



Fig. 2. Discoloration with onycholysis of varying degree in different nails.



Fig. 3. Onycholysis of thumbnail and complete loss of nail of fourth finger.

nails were involved, there was steady improvement following discontinuance of the base coat, and within a period of six weeks the nails were almost normal. In another case all of the finger nails were involved in their entirety, and several were shed, and after eight weeks there has been but slight improvement.

Histologic Features

The histologic features of disturbances of the nails produced by base coats are reported through the courtesy of Dr. Louis H. Winer of Beverly Hills, California, who performed a biopsy on a characteristic case. Dr. Winer reported that the nail itself and the epidermis forming a cover for the upper portion of the tip of the finger showed no important pathologic changes. The epidermis of the proximal portion of the nail bed near the root of the nail, however, showed hyperkeratosis and vesicles containing nests of solidly packed, nucleated, keratinized epidermal cells. The nests of abnormal cells apparently forced the nail to become separated from its bed. Only the epidermis was apparent since the cutis was too thin and firmly attached to the bone to be included in the histologic section. Dr. Winer felt that the histologic picture was similar to that of contact dermatitis in other locations.

Experimental Applications

Patch tests with base coats offer an unusual problem in application and interpretation. The ideal test-area should be the fingernail or toenail. Multiple applications should be made, and some of the applications of base coat should be covered with nail enamel. Although glabrous skin may prove a suitable site for patch testing in this condition, too many of the procedures used in beauty parlors are omitted to make this method exactly comparable to patch testing in ordinary contact dermatitis.

Experimental applications of base coat and base coat plus enamel were applied to toenails of two patients at weekly intervals in an attempt to determine the time required to produce changes of the nails. Before each application the toenail was cleaned with polish remover. Both of the patients had disturbances of the fingernails produced by base coats.

Base coat alone produced changes of the toenail in five weeks; base coat and colored enamel, in three weeks. In both instances the first change was an amber discoloration at the lateral border of the nails, Paronychia developed in five weeks in the nail to which base coat and enamel had been applied. In ten weeks subungual hyperkeratosis developed in the same nail, and it had become completely discolored. This experiment suggested that the combination of base coat plus the occlusive covering of enamel produced changes more rapidly than the base coat alone.

Two patch tests with base coat on the anterior portion of the thigh were positive in seventy-two and ninety-six hours and remained for several days. Nail polish gave no reaction after twenty-four, forty-eight and seventy-two hours. The positive reactions of base coats did not extend beyond the site of application, thus resembling reactions produced by mechanical irritants.

Comment

Several questions arise in considering the pathogenesis of these changes of the nails. Is the substance producing the disturbances a primary

irritant, or is a process of hypersensitivity involved? Does the substance penetrate the nail plate, producing damage in the nail bed, or does it reach the nail bed from beneath the tip of the nail or at the base or lateral margins? Since the introduction of the newer base coats there have undoubtedly been many millions of applications, yet the reactions have apparently been relatively few.* For this reason it seems to us that the material must not be a primary irritant and that individuals who develop this type of disturbance must be hypersensitive to some ingredient in the base coat. Certain types of nails, because of their structure, thickness, fragility, or their chemical or allergic reactivity, may be predisposed to changes following the application of base coats. The disturbances vary in different nails of the same person and in different individuals. Even though most manicurists use caution to avoid application of substances beneath the nail it is impossible to avoid entirely their deposition under the free edge or beneath the cuticle at the base and lateral margins. Since we do not know the formulas of base coats, we cannot exclude the possibility that substances actually penetrate the nails, producing reactions in them and the subungual tissues. The positive reactions to patch tests with base coats in individuals who present these changes suggest that there is an actual contact dermatitis of the nail bed. The accumulation of hyperkeratotic material beneath the nail causes onycholysis and, in same cases, complete shedding of the nail. This report is preliminary, and considerable work is necessary before the problem can be completely appraised.

*One manufacturer alone reports the sale of more than 2,000,000 bottles, meaning 130,000,000 applications.

TRACHEOTOMY: INDICATIONS AND TECHNIQUE

(Continued from Page 1215)

Decannulation

This is accomplished in patients having properly performed tracheotomies by simple removal of the cannula after the patient has demonstrated his ability to breathe with the cannula closed for twenty-four to forty-eight hours. We have used rubber plugs whittled out of large rubber corks to close our cannulæ. It is important to use rubber stoppers, as fragments of ordinary cork may become pulmonary foreign bodies. These rubber stoppers should be secured to the tape encircling the patient's neck by a piece of thread 6 to 8 inches long. They are tethered by this thread when blown out of the tracheal tube if the patient coughs. In some cases half-round corks are used to partially occlude the lumen before full corking is done. Some surgeons use the obturator of the tracheotomy cannula as the stopper when trying out the patient's ability to get along with his tube occluded. We have not felt that this was quite as safe as the method outlined above.

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Case Report

EARLY ACUTE BENIGN SYPHILITIC HEPATITIS WITH JAUNDICE

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A case of early acute benign syphilitic hepatitis with jaundice is reported because of its rarity and because of suggestions for improving treatment. The example cited here is the only one recorded at the Ancker Hospital in Saint Paul.

Case Report

M. R., a white ward-maid, aged twenty-six, consulted her family physician February 18, 1947, because of a headache, a generalized eruption and jaundice. The patient stated that she noticed a vaginal discharge and dysuria about January 1, 1947. There had been numerous sexual exposures. A chancre was not found. She had a florid, generalized, macular secondary syphilide with mucous patches and patchy hair loss. A generalized superficial lymphadenitis was present, with the largest lymph nodes in the left inguinal region. The blood Wassermann reaction was strongly positive. She stated that jaundice appeared suddenly February 16, 1947. She was deeply jaundiced when admitted to Ancker Hospital on February 21, 1947. Severe headaches had been present for one week, and they were characterized by morning remissions and nocturnal exacerbations. The liver extended 1 inch below the costal margin, and the spleen was not palpable.

On February 21, the patient was put on a high caloric, low fat diet and given multivitamines. 50,000 units of aqueous penicillin were given intramuscularly every three hours.

On February 23, the jaundice was more intense and the liver and spleen were 2 inches below the costal margin.

The next day, the patient was nauseated and had anorexia. The penicillin was stopped, and 1 c.c. of bismuth subsalicylate in oil was given intramuscularly. This was continued at three-day intervals for nine weeks.

By February 27, the nausea and headache had disappeared, the liver and spleen were smaller and less tender.

On March 23, the liver was barely palpable, the spleen was not palpable, and the jaundice had decreased a great deal. 40,000 units of aqueous penicillin were started intramuscularly every three hours and continued until 4,800,000 units were given.

On July 1, the patient felt well, the jaundice had disappeared, the liver and spleen were not palpable, and all physical signs of syphilis had disappeared.

On September 6, the patient was asymptomatic and physically normal. The blood and spinal fluid Wassermann reactions were negative, and the other spinal fluid findings were normal.

ICTERUS INDEX CHANGES

Date	*Icterus Index*
2-25-47	165
3-1-47	200
3-6-47	225
3-9-47	150
3-14-47	83
3-25-47	42
4-1-47	30
8-8-47	7
12-20-47	5

Moore[2] stated that hepatitis of early syphilis occurs not more than once in 1,000 persons recently infected with syphilis. Stokes[4] observed only one undoubted case of early syphilitic hepatitis with jaundice in a survey of 300 patients with early syphilis. Wile[6] believed that the incidence was under 1 per cent.

The best working classification of syphilis of the liver seemed to be that of O'Leary[3] and his group. The classification follows: (1) early acute benign hepatitis, (2) syphilitic destructive hepatitis, or acute yellow atrophy, (3) subthreshold hepatic syphilis detected by functional tests, (4) hepatorecurrence, (5) mild chronic hepatitis of latent syphilis, (6) diffuse and localized gummatous hepatitis, (7) chronic interstitial pericellular cirrhosis of heredosyphilis and (8) perihepatitis.

Early acute benign hepatitis is a rare complication of the florid eruptive stage of syphilis. The chief symptom is jaundice, and the chief sign is enlargement of the liver. Stokes[4] stated that acute benign hepatitis of early syphilis is difficult to distinguish from intercurrent nonsyphilitic catarrhal jaundice and hepatorecurrence. Differentiation depends on (1) the presence of a chancre or secondary syphilitic eruption, (2) a Herxheimer reaction following treatment and (3) prompt cure if treatment is continued. Waugh[5] stated that there is no record of any patient with benign hepatitis of early syphilis coming to autopsy. Therefore, the pathologic condition of the liver has not been studied in this disease. The modern use of liver biopsy will enable workers to study pathologic changes in the liver.

Treatment for acute early benign syphilitic hepatitis with jaundice has been extensively discussed. Even though all authorities have thought that it was safe to use an arsphenamine preparation, there was a general feeling of uneasiness in doing so. Stokes[4] and others later advocated a combination of bismuth and arsenic. At present, it seems that the combined use of bismuth and penicillin is the most satisfactory treatment. The Herxheimer reaction and symptoms such as jaundice, anorexia and nausea can be controlled by decreasing or temporarily discontinuing penicillin when these signs and symptoms appear.

These reactions can be regulated even better by daily observation of the icterus index. Elliott and Todd[1] noted the value of observing the icterus index as early as 1928. The icterus index goes up before symptoms appear. If penicillin is stopped or the dose decreased, most unpleas-

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History of Medicine In Minnesota

NOTES ON MEDICINE IN FREEBORN COUNTY, 1857—1900

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Albert Lea, Minnesota

(Continued from October issue.)

Itinerants and Charlatans

The itinerant physicians that came with regularity were, as a rule, accepted and given office space by the local fraternity. These were, for the most part, high class men in their respective fields, and did very satisfactory work for their patients.

Charlatans came in numbers, advertising blatantly their lectures for men or for women only, or for special diseases. They usually stayed a few days only and left when exposed by the newspapers.

Physicians†

Dr. Albert Clark Wedge was a pioneer settler and for nearly fifty years was a leading physician in Freeborn County. He was a son of Rev. Albert and Elizabeth (Clark) Wedge and was born in Lewis County, New York, August 18, 1834. He descended from a family of Puritan stock, prominent in the early history of New England. Thomas Wedge, the founder of the family in America, settled in Litchfield, Connecticut, at an early day and five of his descendants were patriot soldiers in the Revolutionary War. The doctor's grandfather, Solomon Wedge, moved to New York state at the beginning of the nineteenth century and settled on a farm in Lewis County. He was a member of the New York militia and took part in the War of 1812. His sister married William Grant of Litchfield, Conn., a member of the family of ancestors of General U. S. Grant; and their son, Asahel Wedge Grant, was the first to respond to the call of the Congregational Society of Foreign Missions for a medical missionary to the Nestorians of Persia. He died at Mosul, Turkey, where he lies buried by the river Tigris, near the site of ancient Nineveh. Albert Wedge, the father of Dr. Wedge, was born in Connecticut in 1808, and was one of a family of eight children. He was educated for the ministry at Hamilton College, New York, and in 1839 moved with his family to southern Ohio, where he was engaged in missionary work. His wife died at Hillsboro, Ohio, in 1840, when the future Dr. Wedge was six years old. In 1847 the father moved with his five children to a farm near Pendelton, Madison County, Indiana. He died while on a visit to Wedge Prairie, Fond du Lac County, where his father and brothers were then residents. Together with his wife, he now rests in the family burial plot at that place.

After his father's death, the family was broken up and Dr. Wedge, aged seventeen, went to Wedge Prairie, Wisconsin, to live with his uncle. Here he attended school, worked on his father's farm, and taught in a country school. In 1854 he entered Ripon College and also studied medicine with Dr. J. Rogers at Ripon. Later he attended Cleveland, Ohio, Medical College, from which he was graduated in February, 1857. After graduation he returned to Wisconsin, expecting to locate at Ripon and practice with his preceptor. But his uncle, Lucius P.

†Physicians are listed chronologically, rather than alphabetically, as in previous histories.

Wedge, had been in Freeborn County and acquired property at Albert Lea and through his uncle's persuasion the young physician concluded to locate in Minnesota. His uncle supplied him with money, provisions, a span of horses, and a covered wagon; and in May, 1857, he drove to Albert Lea, which at that time consisted of a cluster of four or five log houses and about thirty inhabitants. To quote his own words:

"A few days after my arrival in May, 1857, I found the good lady of the cabin trying to feed the hungry men who were her boarders, with nothing to cook but flour, of which she made good bread and starch gravy. After a few days of this fare I concluded that I wanted a little change of diet, and so with the team I had driven from Wisconsin I made a trip to Mitchell, Iowa, to see if I could find something better. I found that we of Freeborn County were in a wilderness, yet here was a garden almost at our door."

He erected a frame building for his office and in July, 1857, the two-month-old newspaper, *The Southern Minnesota Star,* carried the modest card, "Dr. A. C. Wedge, Physician and Surgeon." His clientele was meager and the panic of 1857, with repudiation of currency, brought forth barter as a means of trade. In November, 1857, he performed his first amputation, a double amputation of the feet, necessitated by freezing. This patient died in February, 1858, and became the first case to be entered and adjudicated in the office of Judge of Probate in Freeborn County. In this operation he was assisted by a Dr. Charles S. Tarbell of Shellrock. Dr. Wedge filed a claim for $100 for his service in the case, and this was allowed in full, including ten bushels of corn. Dr. Wedge filed on lands under the recently passed pre-emption laws, equipped a drug store, and proceeded to take an active part in building up the community. He was elected chairman of the first Board of County Commissioners when the county was organized in 1858. In October, 1859, he married Miss Betsy Blackmer, a sister of Dr. Frank A. Blackmer. They had one child, a daughter, who died in 1905, leaving a son, Albert Wedge Jones. He, succeeding his father, Mark Jones, now conducts a successful insurance business at Albert Lea.

Dr. Wedge enlisted for military service in May, 1862; was commissioned assistant surgeon to the Third Minnesota Volunteer Infantry Regiment and joined his command at Murphreesburro, Tennessee, the same month. On July 13 he participated in the battle of Murphreesboro, in which his regiment was surrendered to the enemy by the colonel in command. Dr. Wedge was ordered to duty in the hospital and later was ordered to Nashville, Tennessee, where he was on duty in the general hospital for several months. His regiment was then exchanged, and he joined it again at Cairo, where it took part in the campaign through Kentucky and Tennessee, joining General Grant's main army at the investment of Vicksburg. In September, 1863, he was commissioned surgeon with the rank of major. He was with General Steel's forces in the expedition to capture Little Rock, and in all the battles connected with the campaign in Arkansas during 1864 and 1865. Together with his regiment, he was mustered out of the service in September, 1865, at Devil's Bluff, Arkansas.

Dr. Wedge was at all times very efficient and faithful as a surgeon and had the fullest confidence of all the officers and men to whom he ministered. He performed especially notable service for the Third Regiment during its stay at Pine Bluff in the spring and summer of 1864. The regiment was then encamped in a swampy, unhealthy locality, and a violent epidemic of malaria broke out. The result was disastrous. A large majority of his command was stricken. From May to August 150 died. The doctor labored incessantly and without adequate medical supplies and, when at last he became infected, no quinine could be

obtained (*Freeborn County History,* 1911). After returning to Minnesota, he resumed active practice, took the place of leadership in civic affairs, and became especially active in Republican politics in the state. He served in the lower house of the state legislature in 1870 and 1871, and was the chairman of the committees on railroad and state prison investigation.

In a vest pocket diary and account book which he kept through 1870 and 1871, the following entries occur:

"Jan. 1, 1870, draw out of bank $50.00, start for St. Paul; arrive at Ramsey 11½; arrive at Park Place 8:00 P.M.; rather a pleasant day. Sunday, Jan. 2, '70, attend church in the evening; heard Rev. Mr. White. Day very pleasant. Monday, Jan. 3, '70, a lively day, caucus this evening. Tuesday, Jan. 4, '70, House organized today. Wednesday, Jan. 5, attend the Grand Lodge this afternoon. Cold damp wind making it rather unpleasant. Friday, Jan. 7, House adjourned to Tuesday next. Governor and State Officers sworn in today. A stormy day, snow and cold. Saturday, Jan. 8, arrive home at 2½ a.m., find everything lovely. January 9, a stormy morning but pleasant. Amputate leg for Mr. C—. Attend church in the evening. Tuesday, Jan. 11, House meets at 2:00 p.m. No business of importance. Transact some business in state treasurer's office. Sunday,. Jan. 16, snow and rain. Very unpleasant. Attend church, hear Rev. Mr. A—; make some calls in the evening. Monday, Jan. 17, a cold northwest storm, so much snow in the air we cannot see; rail cars do not go. Jan. 18, do not get away because of snow."

During the campaign for state senator in 1879, he was opposed by the temperance people. On one occasion he said, "I do not care for the temperance voters and I hope those voters will remember that on election day." But he introduced a bill in the legislature, which was passed, granting county supervisors the power to license and restrain the sale of liquor. He sponsored a bill to set aside internal improvement lands for payment of the old railroad bonds. Later, when these bonds were declared fraudulent and were repudiated by the signature of the governor, Dr. Wedge, with his sterling honesty, remarked: "Any one who votes to repudiate these bonds is a dishonest man."

In the legislative session of 1879-1880, he served on the committees of the state university and university lands and of education and railroads. He resigned as senator in 1881, to accept the appointment as District Collector of Internal Revenue, with office moved to Albert Lea. He was a delegate to about every Republican county and state convention, and to the Republican national convention in 1880, when President Garfield was nominated. He served as Assistant Surgeon General on the staff of both Governors Merriam and Nelson. In 1883 he served, under the governor's appointment, as a member of the State Board of Medical Examiners and Licensers, and for one year was chairman of the board. After the laws were revised in 1887, he also served as a member for many years. In 1878, as a delegate to the State Medical Association's meeting, he served on the executive committee and also as chairman of the committee on surgery. In the October, 1879, meeting, he was chosen president of the State Medical Association and it was decided that the meeting in 1880 should be held at Albert Lea. In 1878 he was appointed on a committee including Dr. Frank Blackmer, to draw up articles of incorporation for the village of Albert Lea. In 1861 he and Dr. A. M. Burnham were the medical representatives on the staff of executioners at the one and only legal hanging in Albert Lea. In 1888 he was chosen vice chairman of the Freeborn County Anti-Horse Thief Asociation, comprising a captain and sixty vigilantes "organized and ready for business." In 1857 he was instrumental in organizing the first lyceum, under the inspiring name, "The Albert Lea Senate." In 1885 he was chairman of the committee on organization of the Freeborn County

Agricultural Association and County Fair. "No citizen leads Dr. Wedge in enterprise and plans for progress of the people. He provides the fair grounds, including a fast racetrack, for the first County Fair."—*Standard,* 1885.

In 1887 he delivered lectures on physiology to classes at the Presbyterian Ladies' College. In 1889 he was included in Governor Merriam's party to the centennial celebration in New York City. He met and visited with President Harrison, Secretary Windom, Generals Sherman and Schofield, Admiral Porter, and other dignitaries. In October, 1892, he, as a member of the governor's staff, attended the dedication services on Columbus day at Chicago World's Fair. In July, 1890, final articles of incorporation of Freeborn County Agricultural Association were drafted and were signed by Dr. Wedge among the first on the committee. In May, 1896, he was chosen vice president of the National Association of Railway Surgeons. In 1898 the Society of Territorial Pioneers was organized in his office with Dr. Frank Blackmer as historian. In the same year Dr. Wedge was instrumental in organizing the Albert Lea District Medical Association, comprising physicians from Freeborn County and from Worth and Winnebago Counties in Iowa. Dr. Wedge was chosen temporary chairman, and later chairman, of the permanent organization. Twenty-six physicians joined at the first meeting. In 1903 at the organization of the Freeborn County Medical Society, Dr. Wedge was chosen its first president. He was in regular attendance at county and state medical meetings and frequently in attendance at the national meetings. He was a busy physician and surgeon, and charged small fees, as was the practice in those days. In a day book dated 1873, appear the following entries for March:

"C— to visit wife at night, $1.50; Mr. R— to visit wife and self $1.00; L— to visit (6 miles) and medicine self $4.00; Mr. W— to call and advice for self $1.00; J— to visit baby $1.00; Mr. A— Obst. wife $10.00. February 3, 1873, to obstetrics and forceps $20.00; consultation Dr. Froshaug, office, amputation toe $5.00."

Aside from his farming and political interests, his hobby was the raising and breeding of thoroughbred shorthorn cattle. In this he performed a great service to the county by building up a better quality of livestock. He raised and bred good trotting horses and attended the trotting races regularly. A long time hobby of his was to serve as helper, adviser, and pensioner for old indigent horsemen. Even until his last years they would come to him for the needed help and comradeship and would depart with the usual $10.00 or $20.00. His sterling worth as a man of prominence in the state and his standing and ability as a physician and surgeon have been subjects of various articles in the press and medical journals, and merit remembrance. The least that we can do in honor of this kindly distinguished gentleman is to call to mind his lifelong service to this community.

Nature gave him a sound mind in a sound body, and he needed both to accomplish what he did under the pioneer conditions of life in the region in which he chose to apply his talents and serve his fellow men. He needed courage, he needed ability, and he needed good will; and he possessed them all in abundance. He died October 23, 1911, at the age of 77 years. "At his funeral, business throughout the city was suspended at the order of the mayor, and thousands followed in sorrowing concourse to the grave."—*Standard,* October, 1911. Providence was kind to Freeborn County in providing this true physician and counselor, Dr. A. C. Wedge.

Dr. Franklin Blackmer was born in Allegheny County, New York, June 10, 1804. Choosing medicine as his profession, he no doubt read with able preceptors and was graduated. He practiced in Amherst, Ohio, from 1831 to 1856.

He married Miss Minerva Wilkins in 1833. He came direct to Minnesota in 1856 and settled on land adjoining Fountain Lake, at Albert Lea. One son, Dr. Frank, and one daughter, Betsy, who became the wife of Dr. Wedge, were the only children.

Dr. Franklin Blackmer was recognized as a well-read physician and was highly respected as one of the first settlers. He never engaged in the practice of medicine here in Freeborn County. His death in 1877 was keenly mourned by the old settlers, who shared with him the hardships incident to the new country.

Dr. George Watson was the first senator to represent Freeborn County in the state legislature. He served from 1858 to 1862. By provisions adopted at the constitutional convention in 1858, the representative boundries were changed and Freeborn became attached to Faribault County, forming the fourteenth senatorial district. Dr. Watson was elected senator from this district in 1858 and served until 1860. In 1860 another change was made, connecting Freeborn with Steele and Waseca counties, forming the sixteenth senatorial district. Dr. Watson was again sent to the Senate and served until 1862.

Not much is known of Dr. Watson except that he was a politician. His home was in Sumner village, Moscow Township, which became an historical landmark years ago.

After his service as senator (1858-1862), Dr. Watson moved to St. Paul, where he secured a government position as chief clerk in the surveyor's office, a position he held for about fifty years. He was always referred to as "Doctor" but there is no evidence that he ever practiced medicine (*Freeborn County History,* 1882).

Dr. Charles S. Tarbell was located at Shellrock in 1857. The *Freeborn County History,* 1882, refers to C. S. Tarbell as coroner, 1857-1858. The only record that would indicate that he practiced medicine was found in the files of the probate court, in which he filed a claim for forty dollars as a fee for assisting Dr. Wedge in performing a double amputation in November, 1857. The claim was not allowed in full but was reduced to thirty dollars, ten of which was paid with ten bushels of corn in November, 1859. He evidently did practice at Shellrock at that time but left during the war.

In 1857 a newspaper notice refers to a **Dr. Yates,** located in Riceland Township, but nothing further is known of him.

Dr. Alfred Mark Burnham was born in Genisee County, New York, October 16, 1825, and received his early education there. He attended the public schools, Bethany Academy, and the schools at Springville and Centerville. He read medicine with Drs. Steward and Farmer, finally entering the University of Buffalo and graduating from the department of medicine in 1853. He came to Freeborn County in 1857 and settled on land which he named Paradise Prairie and which later contained the townsite of Itasca.

His first winter was spent at Shellrock (Glenville), where he built a hotel, and on a contract for $244 constructed the first bridge across Shellrock River. Later he constructed a steam-propelled boat called the Itasca, on which he transported lumber and logs (no doubt from government lands) up the Shellrock River, Lake Albert Lea, and on up to his town-site, Itasca, on Paradise Prairie. Itasca soon claimed a hotel, a blacksmith shop, a shoemaker shop, a drugstore, a newspaper, and a dozen houses. The purpose of all this was to secure for Itasca the dignified status of county seat.

In the guerrilla warfare with Albert Lea that followed, Itasca lost, and soon passed into oblivion. A couple of instances may be mentioned. Itasca followers with Dr. Burnham executed a $6,000 bond, pledging to build a court house of brick, to be completed in two years. Albert Lea followers with Dr. Wedge executed a $5,000 bond, pledging to furnish a court house and jail free of all cost to the county. Dr. Burnham had acquired the ownership of the hotel at Bancroft on the authority of a dollar and thirty-five cent tax certificate. This he moved to Itasca by two strings of ten ox teams, each led by a team of horses. At the same time a Presbyterian minister came to Albert Lea and was very enthusiastic about building up institutions in the interests of his denomination. The Albert Lea group (with the able assistance of Dr. Wedge no doubt) sensed his enterprising spirit and suggested to him that the hotel at Itasca would be a splendid suburban location for such a school. The minister approached Dr. Burnham, who, delighted with the idea and being anxious to do what he could to aid in the work, was willing and ready to sell the hotel. The transfer was made, the Albert Lea proprietors paying for it. It was then torn down and moved to the county seat. The scheme having served its purpose, no more money was advanced; and the ardent proponent of Itasca as a school-site moved on to some more promising locality.

It is difficult to determine the amount of time Dr. Burnham devoted to the practice of medicine. At divers times his speculative ventures took him far afield.

"Dr. Burnham, of Itasca fame, discovered another gold mine five miles west of Ft. Saunders; specimens are encouraging."—*Frontier Index,* Ft. Saunders, Dakota, February 20, 1866.

"Dr. Burnham, the inimitable, reports he has a grain sack full of greenbacks acquired while under contract with the Union Pacific Railroad for cutting railroad ties in Wyoming Territory."—*Standard,* 1869.

An article by Ida Picket Bell, titled "Pioneer Family Life at Itasca," states:

"Another boomer was Dr. Alfred Burnham, a bright reckless young physician, who came from Buffalo with his young wife. He gathered around him a bunch of adventurers, and there were wild stories about them, which were probably much overdrawn but which surely had some foundation in fact. His wife was a darling and was beautiful, but the kind of men she had to live with made her do some strange things. She would either have to do that or sink under the current. But she was not the sinking kind. My mother found her to be a warm-hearted, helpful friend and we children learned to love Aunt Russia. She died childless, June 7, 1865, and lies buried in a lonely little graveyard on Paradise Prairie."—*Albert Lea Tribune,* November 7, 1932.

Dr. Burnham enlisted in the Tenth Minnesota Regiment, October 11, 1862. He was discharged on special order, on a peoples' petition in October, 1863.

"We are informed that Dr. Burnham of Itasca is scattering his money with a lavish hand. He is remodeling his dwelling, also repairing farm buildings, building barns and granaries and erecting several miles of fence."—*Standard,* June, 1871.

"Dr. Burnham is getting a good deal of practice already. The doctor has many friends and will have a large practice when people know that he is available."—*Standard,* February, 1880.

"Dr. Burnham, together with Dr. Frank Blackmer, shipped six carloads of cows to Laramie, Wyoming. Dr. Blackmer will spend the winter in Denver and Dr. Burnham will go to the West Coast with his family, having disposed of all his properties here."—*Enterprise,* January, 1884.

"In a letter he writes as follows: 'Sold cattle and horses same day; bought ticket to Portland; got into cars 9:00 P.M., dog, parrot, children, wife with three saratogas and self in black dog skin coat. Arrived at Portland seventh day. Took in town of Portland by riding every street car to the end. Fine town, lots of business. Took boat forty miles, then via Northern Pacific to Tacoma. Rest a day, rent house which cost three hundred dollars, at

sixteen dollars per month. Ships coming and going, streets full of strangers, one hundred stores, one thousand buildings under way, large hotel and school house, fine teachers and books. Business enough here for me. Inhabitants American entire and all like a mess of maggots. I have come home.'"—*Enterprise,* March, 1884.

In 1886 Dr. Burnham moved to the coast and finally accomplished his heart's desire in founding the town-site of Gig Harbor, Washington. Dr. Burnham's second wife was Miss Hord. To this union four children were born: Lulu S., Frank M., Clarence S., and Alley.

"The many friends of Dr. Burnham, who was a conspicious figure in pioneer days of Freeborn County, will regret to learn of his death at Gig Harbor, Wash., July 11, 1896. He was one of the biggest-hearted men that ever lived and was admired for his sterling qualities. He was bluff and outspoken, but a kind-hearted, generous man, a good husband and father." —*Enterprise,* July 16, 1896.

Dr. J. K. Moore.—A short paragraph in Freeborn County History, 1874, states that in 1861 J. K. Moore came to Freeborn village and offered his services as the first physician in that village. He evidently left very soon, as no record is found of his continuing practice there.

Dr. Elizabeth (Heath) Stacey, wife of Judge E. C. Stacey, was born at Pike, Allegheny County, New York, October 4, 1817. She died at Albert Lea, December 19, 1896, in her ninetieth year. She came with her husband to Freeborn County in June, 1856, locating at Geneva. It is told that she named Geneva and the adjoining beautiful Geneva Lake. In December, 1859, Doctor and Judge Stacey, together with their children, moved to Albert Lea, where the family resided until the father and mother died. In 1840, at the age of twenty-three, Dr. Stacey was united in marriage to Judge Stacey, son of the noted Nathaniel Stacey of the Universalist Church. For a number of years thereafter, the family resided at Columbus, Warren County, Pennsylvania, until they came to Minnesota in 1856. Four children, one daughter and three sons, were born to this union: Dorr, Day, Lynn, and Lizzie. The last two died early in life. Judge Stacey died in April, 1897. Dr. Stacey, a brilliant student and teacher, was a remarkable woman of unusual strength of character. She was a practicing physician for many years, especially during the Civil War. She attended many obstetrical cases during those years. She was said to be the first woman physician to graduate from the University of Michigan Medical School and the first regular woman physician to practice in Minnesota.

She was faithful both to the responsibilities of her calling and to those of her household, and considerate toward her neighbors and their welfare and happiness. She was an ardent temperance worker and held high places for many years in the councils of the Good Templars. She traveled a great deal in the 1870's and 1880's, both in this country and abroad, including Mexico, Alaska, Europe, Egypt, and Palestine. She was an ardent worker and worshipper in the Universalist Church, to which she freely gave of her counsel and her means. She died after a brief but "acute attack of stomach trouble," December 19, 1896 (*Standard,* December, 1896).

It is a pleasure to bring to light the memory of this aristocrat, this patriotic pioneer physician and philanthropist.

(To be continued in the December issue.)

President's Letter

"LICENSE TO PRACTICE"

William Osler, the renowned professor of clinical medicine, had just returned to the United States after a wedding trip to England and was being entertained at the Minnesota Club one October evening in 1892 by members of the Minnesota Academy of Medicine. After dinner the guests adjourned to the House of Representatives in the old State Capitol where he then spoke on "License to Practice." A summary of this address, as well as of the subsequent history of medical licensure in Minnesota, is presented in the July issue of MINNESOTA MEDICINE, and I commend it to all members of the State Association as worth-while and informative reading.

The entire article sets forth the principles of practice which form the main points of the law as it exists today, as recorded in MSA 147.02 under the heading of "Examination and License; revocation." Nine specific rules are listed, defining the limits of "immoral, dishonorable or unprofessional conduct." It would be well for everyone to refresh his acquaintance with his minimum professional obligations as set forth in these nine rules.

It is, of course, impossible to comment on each of these in this brief letter. Consciously or otherwise, all of you are acquainted with them. The one, however, which bears particular emphasis at this time is No. 9, and reads, "Conduct unbecoming a person licensed to practice medicine or detrimental to the best interests of the public." Although the occasions when the board has found it necessary to enforce this particular point are rare, I am sorry to say that some such situations have occurred.

Will anyone disagree that privileges granted the practicing physician by his license also impose upon him a strong obligation to behave in a manner thoroughly becoming the intent of rule No. 9? Right now certain types of medical testimony are causing great concern to our State Association. Nothing ranks higher than truth, and it is imperative that medicine always be on a high plane, not only in the hospitals and in daily practice, but also in its relation to other professional groups. By the same token there is no room for professional jealousy, if medical practice is to continue in high respect. There is no reason for ever hearing the phrase, "Well, Dr. Jones and Dr. Smith just do not get along with each other." I am sorry to say that instances have arisen when the Board of Medical Examiners has been sorely pressed to avoid punitive action suggested by the attitude of one physician toward another.

Ours is a profession which should be always above petty jealousies, not only for the sake of the patient and of medical progress *but for our own sakes.* Does anyone think for a moment that actions within our membership which reflect adversely upon the profession do not suggest to our customers—the lay public—that our job could be done better under government direction? Let's keep first and foremost in mind the fact that public opinion in this, as in other respects, must be served through a full sense of responsibility which seeks to avoid petty quarrels and jealousies and actions which are unbecoming and in clear violation of accepted rules. Try as we doctors may, we shall not succeed in building public good will—we shall not have the public fighting on our side—if the nature of the everyday conduct of *any one of us* leads the public to believe that its welfare is not being best served because of our poor judgment and poor professional manners.

The history of licensure in Minnesota reveals that it has steadily encouraged the highest standards of practice in medicine. We physicians must strive in every way to maintain that high level of service and never allow ourselves to be guilty of conduct which may overstep the privilege inherent in our license to practice, and thereby incur costly public disfavor.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

BLUE CROSS AND BLUE SHIELD CONSOLIDATION

AS we go to press, a meeting of the National Blue Cross and National Blue Shield associations, the former composed of the state voluntary prepayment hospital insurance organizations and the latter made up of the state prepayment medical insurance organizations, is about to be held (October 25) at French Lick Springs, Indiana, for the purpose of consolidating the two into a national hospital and medical care insurance organization, to be known as the Blue Cross-Blue Shield Health Service, Inc.

A brochure approved August 20, 1948, by the combined Blue Cross and Blue Shield commissions sets forth the reasons for the amalgamation of the two organizations. The fear that the government will establish a compulsory insurance plan such as that embodied in the oft-proposed Wagner-Murray-Dingell Bill, and the contention that industries operating on a national scale require a national health service, are two of the main reasons given in the brochure for the necessity of the amalgamation. The brochure was sent to the state Blue Cross and Blue Shield organizations, but the various state medical associations had to ask for them in order to know what was in the offing. The meeting was planned without consulting the national or state medical associations as to their approval. As it was through the help, financial and otherwise, of the AMA that the national organization of the Blue Shield state associations was formed, this oversight seems rather inexcusable.

To give a better understanding of the attitude of the physicians of the country to the proposed amalgamation the following events are mentioned.

At a meeting of the presidents of the state medical associations held June 19, action was taken that further study of the proposal to form a national Blue Cross-Blue Shield organization be made by the Council on Medical Service of the AMA and that no such national insurance organization be formed at that time. This recommendation was approved by the AMA House of Delegates shortly thereafter.

On October 2, 1948, after the brochure had appeared, the Council on Medical Services of the AMA unanimously refused to approve the proposed amalgamation, and on the same day the AMA Board of Trustees unanimously endorsed the action of the Council. The state medical associations were notified of the action taken by the Council and the Board of Trustees.

In view of the apparent overwhelming opposition to the proposal on the part of the profession, it scarcely seems possible that the proposal will be carried through on October 25. While the Minnesota Blue Shield plan is separate from the Minnesota State Medical Association, it was brought forth by the State Association, and several councilors of the State Association are on its Board of Directors. This places these Councilors in a delicate position to say the least.

We cannot go into the pros and cons of the proposed consolidation of the associated Blue Cross and Blue Shield organizations. The arguments of the proponents that it is a necessary step to prevent the federal government from establishing a compulsory insurance program does not appeal to us. The proposed Blue Cross-Blue Shield Health Service resembles too closely the proposed governmental plan. Its overhead would be tremendous, and if it went in the red, what an opportunity for the government to step in. Certainly, too, ways could be devised for insuring employes of national industries in individual state Blue Cross and Blue Shield organizations or separate national Blue Cross and Blue Shield associations.

Certainly the unanimous opposition of the members of the Council on Medical Service and the Board of Trustees of the AMA, who doubtless studied the proposition, means much. If the AMA House of Delegates had been given the opportunity to act on the present proposal, it undoubtedly would have voiced its opposition. The meeting of October 25 suggests the enthusiasm

and premature action of a few in a matter which requires more deliberation.

The Oregon State Medical Association has been following these events with remarkable zeal and has publicized their sequence and taken a firm stand against the amalgamation. According to the latest news a civil suit has been filed by the Federal Department of Justice against the Oregon State Medical Association, the Oregon Physicians Service, eight county medical societies and eight individual doctors, charging them with violation of the Sherman anti-trust act in conspiring to deprive the public of the opportunity to acquire prepaid medical care insurance from other sources. The suit is obviously a test case. On the outcome of the suit the status of the other state Blue Shield organizations will be determined.

BULLETIN OF THE UNIVERSITY OF MINNESOTA HOSPITALS AND THE MINNESOTA MEDICAL FOUNDATION

EACH member of the Minnesota State Medical Association has been sent a copy of the *Bulletin of the University of Minnesota Hospitals and the Minnesota Medical Foundation.* Membership in the Foundation will automatically bring copies of the *Bulletin,* which is published weekly during the school year and contains full reports of the University Hospital weekly staff conferences, a calendar of events at the medical school and news of special activities in the medical school and among its alumni.

The Minnesota Medical Foundation was established in 1940 and in its eight years of existence has collected more than $90,000 and disbursed about $50,000 in the support of worthy projects such as promoting medical education and research, and in assisting worthy students. Annual dues are $10 and life membership $100. Bequests in larger amounts for specific research projects may also be made. Requests for further information may be addressed to The Minnesota Medical Foundation, 132 Medical Science Building, University of Minnesota, Minneapolis 14. Checks should be made payable to the Minnesota Medical Foundation, and donations are deductible in both federal and state income tax returns.

The Foundation has just established a lectureship at the Medical School as a memorial to the late Dr. Jennings C. Litzenberg, professor of obstetrics and gynecology for many years, who died August 15, 1948, at the age of seventy-eight. A native of Waubeek, Iowa, Dr. Litzenberg obtained his medical degree at the University of Minnesota in 1899. While still a medical student he became an assistant to Dr. L. J. Cooke, the University's physical training director, which position he held for nine years after his graduation. He then specialized and supplemented his education with studies in Vienna, Berlin, London, Glasgow, and Dublin. He headed the department of obstetrics and gynecology from 1914 until his retirement in 1938 to the status of professor emeritus.

WANTED: UNKNOWN DIABETICS

PHYSICIANS will be interested in a national broadcast entitled "Wanted: Unknown Diabetics" which will be one of the 1949 winter series of AMA-NBC broadcasts, sponsored by the AMA, entitled "Your Health Today."

It is estimated that there are about 2,400,000 unknown diabetics in the country today and the broadcast is part of a program of publicity planned for National Diabetes Week which will endeavor to call attention to premonitory warnings and early signs of diabetes.

Featured speakers on the AMA program will be Dr. Elliott P. Joslin and Dr. Howard F. Root of Boston; Dr. Charles H. Best of Toronto; Dr. Lester J. Palmer of Seattle, western vice president of The American Diabetes Association. A patient who has successfully coped with diabetes for more than twenty-five years and remains in excellent health will also take part in the program.

Included in the program will be a memorial tribute to Sir Frederick Banting who, with Dr. Best, discovered insulin and made the control of diabetes possible.

The broadcast will be supervised by Dr. W. W. Bauer of the AMA Bureau of Health Education, and Miss Judith C. Waller of NBC.

The appearance of tubercle bacilli in sputum, gastric contents or other body fluids is an extremely significant episode in the course of tuberculous infection. Hence, a thorough and systematic search for tubercle bacilli must be instituted in all cases where the presence of tuberculosis is suspected or where tuberculosis must be considered a possibility in differential diagnosis.—Francis J. Weber, M.D., *Pub. Health Rep.,* Sept. 3, 1948.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

MR. EWING PUTS HEALTH ON THE ASSEMBLY LINE

Given four billion dollars in tax money, Oscar Ewing, Federal Security administrator, promises to save the lives of 325,000 persons each year, as well as to assure vastly improved standards of health for everyone, "regardless of race, color, creed or income."

His "Ten-Year Program," which he presents as a report to the President, has appeared in published form and only during a political campaign could so many grandiose promises be had for so little (one dollar, sent to the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.).

Since Mr. Ewing opens his brochure with the statement that "every year, 325,000 people die whom we have the knowledge and the skills to save," it is well to begin an analysis of his health program at that point. He breaks down this figure into these component parts: communicable diseases, 120,000; cancer and heart disease, 115,000; accidents, 40,000; infant and maternal, 30,000; other, 20,000. The administrator's answer to this problem of what he calls "premature deaths" is, of course, compulsory health insurance.

Just how medical care could prevent accidents from happening, Mr. Ewing does not explain. Nor does he explain what the ambiguous "other" division of 20,000 mortalities includes. Certainly it is a known fact that many infant and maternal deaths result from home environments, the so-called family way of life. Medical practitioners can prescribe proper diets and other requirements for pre-natal care; but the fundamental health needs—adequate housing, good food, proper clothing—fall outside medical jurisdiction. Furthermore, personality and character traits must be taken into consideration in any study of maternal and child mortality and morbidity rates. Expectant mothers may not have a "will to health." This will to health is reflected elsewhere in the studies of general population groups; for it is to be seen that average expenditures for tobacco, alcoholic beverages and entertainment far exceed the annual outlay for medical care. Families whom Mr. Ewing describes as "medically indigent" may be so only because they have not the will to health; they fail to budget for medical and hospital care. Legislation will not force into a state of healthful living those persons who are not interested in maintaining or restoring their health.

In Mr. Ewing's dream world of 1960 he sees a nation of healthy people; he sees longer life expectancy; he sees research progressing at hitherto unprecedented speeds. The price tag on this Utopia—a 3 per cent tax on all employed or self-employed persons in the United States—he dismisses lightly, for he thinks of this four billion dollars as an investment which will return an estimated 27 billion dollars in one year, this figure representing what Mr. Ewing calls "lost . . . during 1947 in potential production and wages through sickness, partial and total disability."

And how is all this to come about? In Chapter II, Mr. Ewing jousts with the problem of medical manpower shortages and arrives at a three-point answer under the compulsory health insurance plan. Most ominous sounding of the three is his reference to "greater efficiency in diagnosis." Throughout the booklet there is this emphasis on "efficiency"—which leads the reader into a ludicrous visualization of scientists turning out a cancer cure or isolating the polio virus according to a "schedule of operations," or a patient being examined by his physician while a "bureau man" stands by with a stop watch.

And while admitting the shortage of medical practitioners, Mr. Ewing proposes a plan that would burden the already overworked profession

with a mass of bookwork and an ever-increasing case load and which would make further medical recruitment difficult because of the elimination of incentive and the destruction of the idealistic medical code.

If doctors are paid fee-for-service, they must prepare voluminous reports to local, regional or national medical care headquarters, and keep carbon copies of all records in case the doctor must prove in court that he charged the correct amount in a given case, prescribed the *standard* remedies or treatment and treated the patient according to the patient's right under the insurance law.

If doctors are paid stipulated salaries, according to number of patients, location of practice and degree of specialization it must inevitably follow that they will be regimented under a system that will put promotions and salary increases on a political basis, make transfers of practice difficult, perhaps placing the transfers on a promotion-demotion level.

Mr. Ewing scoffs at the logical assumption that there would be a break-down of the doctor-patient relationship under his system. After all, he points out, the patient may choose his physician and the physician may accept or reject patients, or even refrain from participating in the program at all.

This aspect of the problem has been subjected to close scrutiny, both in the light of American medical history and the experiences of physicians in countries which are now and have been under a government medical program similar to the one contemplated by Mr. Ewing. It is agreed, even by Mr. Ewing, that at least the opening years of such a plan would bring a flood of patients queuing their way toward doctors' offices—malingerers and persons with minor ailments, determined to get their "money's worth," would be among them. The patient who now may see the physician of his choice by appointment would, presumably, have to wait if the physician he wished to consult already had a full quota. The same situation might be true of hospital care, for England now under a universal medical care plan has been described as having "hospitals full of patients with ingrown toenails."

If doctors were put on a forty-hour week under this plan, it has been pointed out that the ratio of physician hours to total population would be an average of two hours' time annually for each American. Thus, summary treatment of a large number of patients would be unavoidable; the doctor would simply not have time for a thorough examination and diagnosis of every patient.

The charge has been directed at Mr. Ewing that medicine would become a "political football." He refutes the charge, saying that physicians would maintain their professional freedom. But consider the pressure from taxpayers: with the cost of medical care mounting, as it would, taxpayers would insist that cheaper drugs and medicines be administered. Combinations of drugs probably would be questioned; new and expensive developments by pharmaceutical houses would be regarded with suspicion by the lay public. Research would suffer from the vagaries of governmental appropriations.

Mr. Ewing has sketched a very attractive design for national welfare but as an architect for health he is a failure, for his blueprint requires a material that few physicians would care to use—socialization.

BROOKINGS REPORT SHOWS FLAWS IN HEALTH PLAN

In May, 1947, Senator H. Alexander Smith, chairman of the subcommittee on Health of the Senate Committee on Labor and Public Welfare, asked the Brookings Institution, widely known as a scholarly, unbiased research organization, to investigate and report on the question of compulsory health insurance.

The resultant 267 pages of carefully prepared facts, figures and analyses are heartening indeed to the medical profession, for this documented study concludes that compulsory health insurance is not the way to improve the nation's health.

"It is apparent that the United States under its voluntary system of medical care has made greater progress in the application of medical and sanitary science than any other country," the report states. "This progress is now reflected in low mortality and morbidity rates of infectious diseases and in increased life expectancy. There is every reason to believe that these trends will continue unabated under our present system of medical care."

The authors of the report go on to call attention to the fact that, in many instances, further curtailment of mortality and morbidity rates must await developments in medical science.

They cite the excellent health record already

achieved by the United States, declaring by means of statistics, "Probably no great nation in the world has among its white population better health than prevails in the United States." Amplifying this statement, with regard to the nonwhite population in this country, Mr. Bachman and Mr. Meriam say, "The nonwhites in the United States have materially poorer health than the whites, but the evidence does not indicate that this condition is primarily or even mainly due to inadequacy of medical care."

Proponents of compulsory health insurance seized on the rejection figures of World War II Selective Service boards as evidence that the health of the nation was reaching new lows and, without government intervention, would continue to grow worse. The Brookings report reinforces the position taken by Dr. Maurice H. Friedman *(Reader's Digest)* and the *Nation's Business* in its articles on the matter of Selective Service statistics as a criterion for judging the nation's state of health.

In the first place, these figures were not compiled as a health report. They include rejections for physical reasons, yes, but often these physical reasons were: failure to conform to height and weight standards, loss of fingers, toes, hands and other members, which certainly could not be attributed to lack of medical care. The standards were not in any sense scientific health standards, but were set up to screen out those men who, though perhaps able to carry on normal civilian activities, would not be capable of enduring the extraordinary strains and stresses of warfare. Often, as standards were lowered during the course of the war, rejectees would be recalled for further examination; thus it was that one person could be rejected as many as five times and each rejection would be counted separately in the grand total. Furthermore, the rejection could be for educational limitations or on moral grounds.

Having called the state of the nation's health good and having compared it satisfactorily with other nations of the world, the Brookings experts examine the proposals for compulsory health insurance.

They find it would necessitate a high degree of governmental regulation and control; they look for a topheavy organization of administrators, auditors, examiners, investigators and the like which, added to the increased case loads and the tendency of some practitioners to use the system for their own financial advantage, would cause the cost of the plan to spiral far beyond the rather staggering estimates made by compulsory health plan sponsors.

Although they sift through every phase of the plan, the impartial Brookings researchers are unable to find any advantages in introducing the program.

PUBLIC HEALTH CONFERENCE HAS SECOND ANNUAL MEETING

Health officers, physicians, nurses, health education workers, sanitary engineers and others whose work relates to public health attended the second annual meeting of the Minnesota Public Health Conference, October 8, at the Saint Paul hotel.

Focal point of the day's program was the discussion of proposed legislation which would enable a county or several counties, united, to establish a local health unit, staffed by a health officer, a public health engineer, a supervising nurse, and additional professional and clerical people according to the size and needs of the area served.

The group was divided according to professional interests for the luncheon meetings, with a general session on local health departments in the afternoon. Katharine F. Lenroot, chief of the United States Children's bureau, addressed the banquet session on the subject of maternal and child health care.

FIFTY PER CENT OF INDUSTRIAL WORKERS PROTECTED AGAINST WAGE LOSS

In a study of 1,150,000 establishments, in industries covered by unemployment compensation, the Research Council for Economic Security found that about 50 per cent of the employes enjoy some degree of protection against wage loss during illness. A total of 30,000,000 workers was tallied for the study.

The Council states in its report, "In every state, with or without compulsory legislation, employers realize the need to protect their workers against wage loss during disability, and have extended such protection on a voluntary basis."

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg.
St. Paul, Minnesota

Julian F. Du Bois, Secretary

Minneapolis Masseuse Pleads Guilty to Violating Basic Science Law

Re. State of Minnesota vs. Joanne Eugena Swanson

On October 8, 1948, Joanne Eugena Swanson, fifty-six years of age, 1615 Thomas Place North, Minneapolis, entered a plea of guilty in the District Court of Hennepin County, to an information charging her with the crime of practicing healing in violation of the Minnesota Basic Science Law. The defendant was sentenced by the Hon. Paul S. Carroll, Judge of the District Court, to ninety days in the Minneapolis Women's Detention Home. The sentence was stayed for three years, on condition that the defendant refrain, in every manner, from practicing healing illegally.

Mrs. Swanson was arrested on July 14, 1948, by Minneapolis police officers in Room 305 at 608 Nicollet Avenue, Minneapolis, where the defendant was operating a so-called bath and massage parlor without a massage license. Subsequent investigation by the Police Department and representatives of the Minnesota State Board of Medical Examiners disclosed that the defendant was treating patients for arthritis, sinus trouble and other ailments and was charging $25.00 for a series of treatments. The defendant was arraigned in the Minneapolis Municipal Court on July 16, at which time she waived a preliminary hearing and was held to the District Court under cash bail of $1,000, which was furnished. The defendant was arraigned in the District Court on July 19, at which time she entered a plea of not guilty. Her case was set for trial for September 13.

The defendant holds no license to practice any form of healing in the State of Minnesota, but claims to be the possessor of a diploma in massage from a Chicago massage school. The school, however, is not recognized by the Minnesota State Board of Medical Examiners, and therefore, the defendant cannot qualify for a massage license in Minnesota. Mrs. Swanson was so advised in 1943 by the Minnesota State Board of Medical Examiners. Judge Carroll warned the defendant that if she violated the Basic Science Law in any manner in the future, that she would be required to serve her sentence.

Two Minneapolis Women Sentenced for Criminal Abortion

Re. State of Minnesota vs. Claretta Carstenbrock, Blanche Bougetz and George W. Rastede

On October 5, 1948, Claretta Carstenbrock, thirty-nine years of age, residing in rural Hennepin County, was sentenced to a term of one year in the Minneapolis Women's Detention Home by the Hon. Levi M. Hall, Judge of the District Court of Hennepin County. The defendant Carstenbrock had entered a plea of guilty on July 7, 1948, to an information charging her with the crime of abortion. The sentence was stayed and the defendant placed on probation for one year, the Court stating that the only reason the defendant was receiving probation was because she had a good record prior to her arrest in the present case. The defendant Carstenbrock has no medical training whatsoever but had been employed for eighteen years as hostess by a country club.

On the same date, October 5, 1948, Blanche Bougetz, forty years of age, 4544 Lyndale Avenue South, Minneapolis, was sentenced by the Hon. Paul S. Carroll, Judge of the District Court of Hennepin County, to a term of not to exceed eight years in the Women's Reformatory at Shakopee. The defendant Bougetz had entered a plea of guilty on July 21, 1948, to an information charging her with the crime of abortion. Judge Carroll stayed the sentence and placed the defendant on probation for six years. Judge Carroll told the defendant that she was being placed on probation solely because of the condition of her health. Mrs. Bougetz weighs over 400 pounds, and a medical examination prior to sentence being imposed, disclosed that she is in poor health. However, Judge Carroll told Mrs. Bougetz that if she is involved in any more violations of the law, she will be sent to the Women's Reformatory, even if it means that she will die in the institution.

The defendants Carstenbrock and Bougetz were arrested in June, 1948, along with the defendant George W. Rastede, a Hudson osteopath, following an abortion on April 25, 1948, on a twenty-two-year-old LaCrosse woman. The patient was referred to the defendant Bougetz by the defendant Rastede, and the abortion was performed by the defendant Carstenbrock at the home of Mrs. Bougetz. The sum of $300 was paid for the abortion, and the money was equally divided among the three defendants. The defendant Carstenbrock has no prior conviction, but the defendant Bougetz was convicted of abortion in the District Court of Hennepin County on September 6, 1946, at which time she received a suspended sentence of one year in the Minneapolis Women's Detention Home. She also has a previous conviction in 1932 for the crime of forgery in the second degree. For that offense the defendant Bougetz served three and a half years in the Women's Reformatory at Shakopee.

The defendant Rastede entered a plea of guilty on September 21, 1948, to an information charging him with the crime of abortion in the same case as the defendants Carstenbrock and Bougetz. The Court set October 18 as the date for imposition of sentence in Rastede's case. The defendant Rastede also entered a plea of guilty on October 5, 1948, to a second charge of criminal abortion in which he is named with one Michael J. Koehler. The Court set October 18 as the date for sentencing Rastede.

Wisconsin Osteopath Ordered to Surrender License by Minneapolis Judge

Re. State of Minnesota vs. Claretta Carstenbrock, Blanche Bougetz and George W. Rastede.

Re. State of Minnesota vs. Michael J. Koehler and George W. Rastede.

On October 18, 1948, George W. Rastede, fifty-eight years of age, of Hudson, Wisconsin, was sentenced by the Hon. D. E. LaBelle, Judge of the District Court of Hennepin County, to two separate sentences of not to exceed four years each, on two charges of criminal abortion. Rastede, licensed as an osteopath under the laws of Wisconsin, upon recommendation of legal counsel for the Minnesota State Board of Medical Examiners, was given his choice by the Court of serving four years in the State Prison at Stillwater, or surrendering his osteopathic license for cancellation by the Circuit Court of St. Croix County, Wisconsin. Rastede chose to surrender his license for cancellation rather than serve the prison sentence. Judge LaBelle further deprived Rastede of the right to own or operate a hospital or engage in the practice of healing in any manner, directly or indirectly, while he is on probation.

Rastede told the Court that he was born in Dodge County, Nebraska, and that he was a graduate of the Des Moines Still College of Osteopathy. He stated that he had been practicing for the past ten years at Hudson. Rastede admitted that he had been referring pregnant women to his co-defendants, Claretta Carstenbrock,

Blanche Bougetz and Michael J. Koehler for the purpose of having criminal abortions performed. Rastede also admitted that he had shared in the money paid for such abortions. Rastede was arrested in the first case on June 8, 1948, by Inspector Bernath of the Minneapolis Police Department on a warrant charging him with the crime of abortion in connection with a twenty-two-year-old LaCrosse, Wisconsin, girl who was aborted by the defendant, Claretta Carstenbrock, at the home of the defendant, Blanche Bougetz, in Minneapolis. The sum of $300 was paid in that case, the money being split three ways between the defendants, Carstenbrock, Bougetz and Rastede. Rastede was released on $5,000 cash bail in that case, and while out on bail, sent a twenty-two-year-old Chippewa Falls, Wisconsin, girl to the defendant, Michael J. Koehler, for a criminal abortion. Rastede was arrested in that case on August 25, 1948, and his bail increased to $12,500 which was furnished. Subsequently, on September 21, 1948, Rastede entered a plea of guilty to the first charge against him, and on October 5, 1948, entered a plea of guilty to the second charge against him. The cases against the other co-defendants have been disposed of.

The defendant, Rastede, had a previous encounter with the law in Wisconsin, where, on October 14, 1946, a complaint was filed in the County Court at Hudson, charging Rastede with attempting to produce a miscarriage. In that case a twenty-year-old Winona, Minnesota, girl stated that she paid Rastede $100 for an abortion. The patient became ill and was hospitalized at Hastings, Minnesota. On January 9, 1947, Rastede was acquitted of the charge by a jury at Hudson.

Former Chiropractor Sentenced to Jail for Criminal Abortion

Re. State of Minnesota vs. Michael J. Koehler and George W. Rastede

On October 13, 1948, Michael J. Koehler, fifty-one years of age, 1101 W. 28th Street, Minneapolis, was sentenced by the Hon. Earl J. Lyons, Judge of the District Court of Hennepin County, to a term of not to exceed eight years in the State Prison at Stillwater, for the crime of abortion. The Court stayed the sentence and placed the defendant, Koehler, on probation for eight years, provided, however, that the first year of the sentence must be served by Koehler in the Minneapolis Workhouse.

The defendant Koehler was arrested on August 21, 1948, by Minneapolis police officers following an abortion performed by the defendant Koehler on a twenty-two-year-old Chippewa Falls, Wisconsin, nurse. The nurse had been referred to the defendant Koehler by George W. Rastede, an osteopath at Hudson, Wisconsin. Koehler was paid $350 for the abortion. Upon being first arraigned in Court, Koehler entered a plea of not guilty, but subsequently, on September 1, 1948, Koehler withdrew his plea of not guilty and entered a plea of guilty. Koehler has two previous convictions for criminal offenses. On May 24, 1939, Koehler pleaded guilty in the District Court of Hennepin County to an information charging him with having in his possession instruments, articles and medicine for the causing of unlawful abortions. For that offense Koehler paid a fine of $150 and received a one-year suspended workhouse sentence. At that time Koehler held a license to practice chiropractic in the State of Minnesota. Subsequently Koehler was arrested on a charge of criminal abortion resulting in Koehler pleading guilty on July 6, 1944, in the District Court of Hennepin County to an information charging him with that crime. For that offense Koehler was sentenced to one year in the Minneapolis Workhouse. Koehler served 42 days in the Workhouse and then was released because of alleged ill health. Koehler had stated to the Court that it was necessary for him to go to a different climate to safeguard his health. Upon being released it was learned that Koehler had offered to perform another abortion. The matter was called to the attention of the Court and the Court made an order revoking Koehler's release from the Workhouse. Upon being returned to the Workhouse, Koehler was incarcerated until February 17, 1945, at which time he was released to go to California to live with a daughter. Koehler returned to the State of Minnesota in 1947. Koehler's chiropractic license was revoked on September 6, 1944.

At the time Koehler was sentenced by Judge Lyons on October 13, 1948, the defendant Rastede, likewise, had entered a plea of guilty but had not been sentenced.

Adult types of pulmonary tuberculosis have shown an alarming incidence among children of school age in all of the wartorn countries; tuberculosis of bone and joints has increased many times; miliary tuberculosis and tuberculous meningitis in children are now common. In every children's hospital I visited I saw ward after ward of the victims of tuberculosis. In one small country, not atypical of others, I learned that to take care of the known cases of bone tuberculosis alone among children 7,000 new hospital or sanatorium beds were needed. They had only 500 when I was there.—MARTHA M. ELIOT, M.D., Am. J. Pub. Health, January, 1948.

Early Acute Benign Syphilitic Hepatitis With Jaundice

(Continued from Page 1221)

ant symptoms can be eliminated. Bismuth also can produce the above reactions, so it would be well to use a soluble bismuth preparation early in the treatment, because of its more rapid elimination from the body.

Summary

A case of acute early benign syphilitic hepatitis with jaundice is presented. The most satisfactory treatment probably is bismuth combined with penicillin. It seems best to use a soluble bismuth preparation early in the treatment because of its more rapid elimination from the body. Later, if desired, this can be changed to bismuth subsalicylate in oil. If the above method of treatment is employed, a Herxheimer reaction and other troublesome symptoms can be avoided or minimized by daily observation of the icterus index. The modern use of liver biopsy will enable workers to study pathologic changes of the liver in this disease.

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Minnesota Academy of Medicine

Meeting of May 12, 1948

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 12, 1948. Dinner was served at 7 o'clock, and the meeting was called to order at 8:20 p.m. by the President, Dr. T. A. Peppard.

There were fifty-nine members present.

Minutes of the April meeting were read and approved.

Dr. Ohage read the following memorial to Dr. Alexander Colvin, and a motion was carried that this be published in the Proceedings of the Academy and a copy sent to the widow.

ALEXANDER R. COLVIN
1867-1948

Dr. Alexander R. Colvin was born in Leeswater, Ontario, Canada, February 28, 1867. He received his preliminary education in the Leeswater high school. He then studied pharmacy and, after his graduation, settled in Lethbridge, Alberta, Canada. Here he met a Dr. Newburn who induced him to study medicine. He then entered medical school at McGill University at Montreal, Canada, from where he was graduated in 1894. Following his graduation, he spent two years in the Royal Victoria Hospital as an intern and surgical resident.

Upon completion of his residency, he came to La Crosse, Wisconsin, to take over the practice of Dr. Evans while the latter was studying abroad. It was at this time he decided to locate in Saint Paul. The same year, on June 1, 1897, he was married to Miss Sara Tarleton.

In 1902, Dr. Colvin, accompanied by his wife, went to study in Germany and Austria. He received his postgraduate work at Breslau, Germany, where he studied under the famous Mikulicz, and also in Vienna.

He returned to Saint Paul and became associated with Dr. Charles Wheaton and later with Dr. John Rogers and Dr. Warren A. Dennis, with whom he practiced for many years. He retired in 1948, after fifty-two years of continuous practice.

Dr. Colvin was commissioned a major in the medical corps during the first World War, the highest rank in the medical reserve corps at that time.

Following the war, in 1919, Dr. Colvin was named chief of the surgical staff of the Ancker Hospital, a position he held until the time of his death. He was also a clinical professor of surgery at the University of Minnesota.

He owned and operated the first x-ray machine in Saint Paul.

On January 19, 1948, Dr. Colvin was honored by the members of the surgical staff of the Ancker Hospital and other friends of the profession at a banquet held at the Minnesota Club. This was the last occasion on which Dr. Colvin had an opportunity to meet his many friends and admirers.

Dr. Colvin was a member of the American Academy of Orthopedic Surgeons, the Minnesota Academy of Medicine, American Medical Association, Western Surgical Association, American College of Surgeons, Saint Paul Surgical Society, Ramsey County Medical Society, and The Minnesota State Medical Association, and American Medical Association.

Dr. Colvin was an ardent student of medicine. He was an exhaustive reader and familiar with the English publications on surgery and also the available German surgical literature.

He died on March 22, 1948, at his residence, 1175 Davern Avenue, Saint Paul, Minnesota. He is survived by his wife, Mrs. Sara Colvin, and a niece, Miss Ada I. McKinnon.

The Committee
HARRY B. ZIMMERMAN, M.D.
E. MENDELSSOHN JONES, M.D.
JUSTUS OHAGE, M.D.

The scientific program followed.

A RARE COMPLICATION OF INTESTINAL INTUBATION

OSWALD S. WYATT, M.D.
Minneapolis, Minnesota

Dr. Wyatt's case report was published in the September, 1948, issue of MINNESOTA MEDICINE (page 1022) in the proceedings of the Minneapolis Surgical Society for April 1, 1948.

Discussion

DR. CHARLES E. REA (Saint Paul): The case presented by Dr. Wyatt is very similar to one that was seen at Ancker Hospital about two years ago.

M. L., aged thirteen, was admitted to Ancker Hospital on June 26, 1946. One week before admission she became sick with pain in the abdomen, nausea, vomiting, and fever. On admission to the hospital, she had definite physical findings of a ruptured appendix with generalized peritonitis. A localized mass in the right lower quadrant was drained through a small McBurney incision under local anesthesia on June 27, 1948. Culture of the pus showed Streptococcus viridens and B. proteus. She was treated by means of sulfadiazine, penicillin, streptomycin, blood transfusions, and inhalation oxygen therapy. A Miller-Abbott tube was inserted at the time of admission, and its progress into the ileum followed by roentgenograms. An adequate fluid balance was maintained by intravenous fluids.

From June 27, 1946, until July 3, 1946, she had moderate abdominal distention, and profuse drainage from the incision in the right lower quadrant. At the latter date, Varco feedings were ordered to be given through the Miller-Abbott tube. The student nurse gave the feeding through the "balloon" side of the tube and remarked to the surgical resident that she could not get much of the feeding through the tube. Attempts

to aspirate the solution were unsuccessful. Roentgenograms of the abdomen showed the balloon full of fluid. The tube could not be pulled out. The patient's condition generally became worse. The tube was cut across in the hope that it would pass through the patient, but it did not move. Attempts were made to aspirate and remove the balloon and tube at laparotomies but were unsuccessful due to the patient's poor condition. She died on her thirty-eighth hospital day.

At postmortem there was a generalized purulent peritonitis. The balloon was in the ileum about 2 feet from the ligament of Treitz. It was filled with sour curdled milk. There was no gangrene of the bowel. There was a generalized paralytic ileus.

This complication following the use of a Miller-Abbott tube can be entirely prevented by care in injecting fluids through the right openings. Since the above episode, the surgical resident has been made responsible for the care of the Miller-Abbott tube. On occasion, one can have enough trouble getting the Miller-Abbott tube to work properly without adding a complication.

ADOLESCENT RESENTMENT OF AUTHORITY

EDWARD DYER ANDERSON, M.D.

Minneapolis, Minnesota

It has often been said that adolescence, death and taxes cannot be escaped. This is true, but, under normal conditions, adolescence differs from death and taxes in that it should be welcomed rather than dreaded. Certainly no other period of life can be more full of interest, pleasure and experience. And equally there is no period which can give the parents, the teacher or the physician more interest and satisfaction.

So much has been written and said in recent years regarding the difficulties that can arise in the adolescent period, that many people, including physicians, tend to expect serious trouble and feel that it is bound to be a time of great trial and tribulation for all concerned. Although it is true, even in the normal youngster, that there are occasions which are disturbing and troublesome, usually these are episodes which are not lasting nor serious. During normal infancy and childhood occasions arise which are not pleasant for either the child or the parents, but they do not make us forget the wonderful, pleasant and interesting parts of these periods of growth. The same applies to adolescence, which is also a period of physical and emotional development. Regardless of the occasional disturbing episodes which occur, it is usually a normal, pleasant and interesting part of life. It is extremely important that we physicians do everything in our power to help young people, parents, teachers, social workers, nurses and everyone dealing with this age group to recognize and understand the normalcy of adolescence. We can best do this by helping all concerned to have an understanding of the normal physical and emotional changes that take place.

This paper is written with the hope that it may be of some help in better understanding and interpreting adolescent resentment of authority which is so often confusing and disturbing to adolescents and their parents. Unless understood, it can cause a tremendous amount of misunderstanding, friction and unhappiness. On the other hand, if the subject is wisely handled by parents and others in authority, the normal adolescent will have no serious or permanent difficulty.

This increasing and, at times, overwhelming resentment of authority, even though normal, is sometimes called adolescent revolt. I believe this latter term should be confined to those instances in which the adolescent has gotten completely out of hand for one reason or another and has revolted. One can expect fairly frequent evidences of resentment of authority in the youngster who is emotionally healthy, but not actual revolt. If the emotional growth and development of the youngster has been normal before adolescence and if the parents are understanding and wise during this critical period, abnormal resentment and revolt will not occur.

Adolescent resentment of authority differs from the normal dislike all of us have of being directed or crossed in our desires by someone who has authority and control over us. This adolescent resentment is beyond that which one would normally expect, and often occurs when perfectly reasonable requests are made. There is no logical reason for some of the extreme feelings of resentment and hostility which occur when the parents direct, mildly criticize, or disagree with the ideas of their adolescent child. Another characteristic which is confusing to both the child and the parents is the fact that what may cause no resentment one time may cause an extreme disturbance at another.

There are probably several reasons for this increasing and apparently unreasonable resentment of authority during adolescence. It is believed by some that it is an inherent phase of growth and development which is part of our heritage. Another factor in bringing about this resentment is that when they reach this age they have matured enough to recognize that those in authority, and this applies particularly to their parents, are not perfect and they are disillusioned. Up until this time they have tended to accept without question that the parents were always wise and completely competent to direct all situations. They now realize they do have faults and imperfections and resent the fact that they have been wrong in their judgment. Also because of the confusion, anxiety and uncertainty that often develops because of the marked physical and physiological changes taking place, the adolescent may have feelings of resentment which they cannot explain and which become focused upon the parents. We are all prone to blame things which are unpleasant but unexplained, upon those upon whom we are dependent and who usually protect and shield us from such conditions, and the adolescent is no exception. Whatever the reasons for the increased resentment of authority may be, the fact remains that it is an almost universal development and serves a definitely useful purpose under normal conditions. In a persistent, compelling way it calls to the attention of the parents the necessity of their children's breaking away from parental care and management, so they may learn to stand upon their own feet and eventually be able to manage and direct their own lives. If it were not for this increasing desire for independence with resulting resentment of authority, most parents would continue indefinitely to guide, direct

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Inaugural thesis.

and make all decisions for their children. The result would be that when the young man or woman reached the chronological and physical age of maturity, he or she would be emotionally immature and inadequate and would flounder helplessly when put upon his or her own resources. We see frequent examples of this in adults who were overprotected and never allowed to mature and become independent, with resulting inability to be happy or successful in their marital, social or business life. Adolescent resentment of authority is one of the principal reasons that there are not more such tragedies.

The symptoms of normal adolescent resentment of authority differ with different individuals, but usually the first of these to appear is a strong, unexplainable feeling of resentment toward the parents when an apparently reasonable request is made. Things which they have previously done and accepted without any question or resentment, are obeyed, but with bad grace and an air of grievance. These feelings of resentment and the resulting flare-ups tend to become more and more frequent and intense and, before long, the adolescent begins to speak his mind and register firm objections to advice from or direction by the parents. It should be noted that in most youngsters this resentment is almost entirely directed towards the mother and father, and not to others in authority. Although there may be considerable talk against the authority of the teacher, the principal or the coach, in most instances the adolescent actually feels or shows little resentment towards them. Because parents largely represent authority to the adolescent, they bear the brunt of this growing resentment. This shows itself in many other indirect ways. The adolescent often begins to be ashamed of how his father and mother dress and look. He may become ashamed of their manners and friends, and frequently of his father's jokes, and will cringe both inwardly and outwardly when one is told in the presence of his own friends. All of this regardless of the fact that the parents do dress in perfect taste, have excellent manners and wonderful friends and even the father is a superb storyteller. During this period the adolescent boy or girl begins to disagree with the religious, ethical and political ideas of his or her parents. It is useless to discuss their ideas with them, as they are unable to enter into a discussion except upon an emotional plane and they become markedly upset if one does not agree with their viewpoint. All of this might sound as if adolescent resentment of authority leads to a pretty grim and unhappy time for both the parents and the youngster. Under normal circumstances, this is not so. In the first place, these periods of resentment are usually of short duration. Secondly, if the adolescent is wisely handed, as he gets nearer and nearer to adulthood, he more and more realizes that his parents are not complete social and intellectual failures, and actually begins to like and respect them. As a matter of fact, the normal adolescent feels this way towards his parents most of the time and it is only occasionally that he is disturbed and resentful. Although all the symptoms mentioned may occur on occasion, the relationship between the normal adolescent and his parents is a happy, friendly and relaxed one most of the time.

Although most adolescents have no serious trouble with resentment of authority, unfortunately there are some who do. Although this paper is primarily upon normal resentment of authority, I do wish to discuss briefly adolescent revolt which is sometimes seen. The abnormal symptoms may be varied, but the most common is open defiance toward the parents. This may take the form of defiant, belligerent or even profane speech. There may be complete disobedience and in extreme cases the disturbed youngster may physically attack the parents when crossed, corrected or denied what he wants. The parents may lose all control, and a state of anarchy results. A boy or girl in a state of revolt is usually restless, sullen and unhappy a great deal of the time. A frequent symptom of abnormal revolt is the projection of feelings of hostility and defiance beyond the parents to the authority of the school and even the law. The youngster begins to be a disturbing element in school, with refusal to do the required work, defiance of the teachers, truancy and general trouble-making. When the resentment extends to the authority of the law, the adolescent may become delinquent.

It should be noted at this time that many normal adolescents go through a varying period during which their school work suffers. Most of these youngsters do not know why their work slumps and are mildly disturbed about it and welcome help in the matter. In most instances it is the result of the general mild disturbance and confusion brought about by the increased need for recognition and acceptance, and the new problems and conflicts resulting from the increased sex urge and interest. Also, the interests of the adolescent suddenly widen and increase, and school work may temporarily suffer.

The adolescent who fails in school because of abnormal revolt, differs from the normal youngster who has scholastic difficulties at this time by taking a belligerent attitude about the whole affair. He tends to glory in his failures, blame his teachers for his difficulties and more or less defies the parents and school to help him or do anything about it. Also, his poor work in school tends to continue indefinitely, while that of the normal adolescent is usually of comparatively short duration.

Frequently the adolescent who has abnormal feelings of resentment and revolt finds it difficult to get along with his friends and contemporaries. He has numerous arguments and disagreements and often seeks new friends among those who are also disgruntled, unhappy and emotionally disturbed.

There are some adolescents who react abnormally to feelings of resentment of authority by becoming shy and withdrawn. They never assert themselves or argue when corrected or denied what they want. They show no outward evidence of resentment and seem perfectly willing to be completely dependent upon and dominated by their parents. They tend to stay by themselves, to have few friends, and parents, teachers and schoolmates find it extremely difficult, if not impossible, to establish any close relationship with them. They are

very unhappy and are seriously emotionally ill youngsters. They and their parents are badly in need of help.

There are many causes for the development of abnormal and unhealthy reactions to adolescent resentment of authority. We can assume that an adolescent showing abnormal signs of resentment and revolt was either extremely unstable and disturbed when he reached this age, or the parents were unwise in their management during this period, or both. In most instances, both factors are involved, as parents who manage their children improperly and unwisely before adolescence, with resulting emotional insecurity and instability, usually continue to do so when this age is reached. It is certainly true that a child who is emotionally disturbed or ill when he reaches the adolescent age is almost bound to have an overaccentuation of all normal adolescent problems and this is particularly true of resentment of authority. Such children almost invariably show symptoms of abnormal resentment and revolt. There are obviously many conditions and factors that can cause the fundamental emotional disturbance.

The child who has been overprotected and spoiled is almost sure to have trouble. This is also true of children whose parents are too perfectionistic, demanding or strict.

If one or both parents have consciously or unconsciously rejected their child, a real storm is almost bound to occur when adolescent resentment of authority develops. We know that children unconsciously recognize the fact that they are rejected, and it accentuates their resentment of the authority of the parents. Here we have a personal resentment added to that directed against authority itself.

If one or both parents are delinquent, the adolescent often has difficulty with revolt because of feelings of resentment, shame, lack of respect and motivation. Adolescents who have grown up in a home where there is unhappiness and friction between the parents or which has been broken because of divorce, are particularly prone to develop trouble with resentment of authority. This may also be true when a stepfather or stepmother comes into a family which was previously broken because of death or divorce.

Adolescents who have been frustrated and thwarted during childhood because of a physical or mental handicap frequently have serious difficulty in properly handling resentment of authority. Many mentally handicapped adolescent delinquents come under this category.

There are numerous other causes for emotional insecurity and instability which time will not allow us to enumerate or discuss. However, I wish to emphasize again that whatever the cause, a youngster who is emotionally disturbed when he reaches adolescence is very likely to have difficulty with otherwise normal changes which come at this age. This is particularly true of adolescent resentment of authority. Unwise management of this resentment can lead to disaster in the emotionally stable and healthy youngster, and it is sure to do so in those who are emotionally ill. In cases where the disturbance is severe and of long standing, special psychiatric diagnosis and treatment may be necessary. However, these cases are the exception. The great bulk of preventive mental hygiene and treatment which is so greatly needed can best be done by physicians coming in contact with the adolescent and his parents in the course of regular practice. The understanding and relationship between the majority of parents and their adolescent children is excellent and, in most instances, all that is required is for the physician to give information, support and encouragement. Other adolescents and their parents may need a great deal of instruction and advice regarding the normal reactions and developments of this age so they may understand and meet situations as they arise. Some adolescents present symptoms which indicate abnormal reactions, and physicians can often prevent serious and permanent damage by early recognition of danger signals and the giving of proper counsel and help to correct the underlying cause.

If a few general principles are followed in handling the adolescent and his feelings of resentment toward those in authority, many difficulties that may otherwise develop will be prevented and some of the more seriously disturbed youngsters may be helped.

First, parents should not consider or take the resentment and consequent behavior of the adolescent as a personal affront. This is one of the most frequent mistakes made, as parents often do not realize that their youngster is resenting authority itself and not themselves as individuals. The parents represent authority and therefore will have to bear the brunt of the resentment. They should remember that if someone else had been the parents of their adolescent children they also would have been the object of this same resentment. It is hard not to become hurt and angry when children say and do things which seem so unreasonable, ungrateful and unjust; but if parents can avoid taking it personally, they will save themselves and their children a great deal of unhappiness and heartache. By attempting to treat the whole situation impersonally, the relationship will be kept from becoming a personal fight. Both parents and the child too frequently lose all sense of proportion and say and do things which certainly do not help the situation.

Secondly, parents must keep their sense of humor. Many of the things the adolescent does and says are funny. It may be hard to appreciate the humor at the time, but if parents do not take things too seriously, many a tense situation can be relieved and things will go more smoothly. Obviously, a sense of humor cannot prevent or solve all problems of adolescence, including that of resentment of authority, but it certainly can help a lot.

Thirdly, parents should learn to avoid unnecessary issues between themselves and their adolescent child, and learn to *meet those which are necessary.* This is one of the hardest things for parents to learn. They tend to make one of two mistakes, or both. They either are too rigid and severe, or, because of dislike and fear of an argument or an unpleasant scene, are too lenient and allow their youngsters to do and say things which they should not. Some parents do what is even worse, namely, go from one extreme to the other, with resulting confusion and bewilderment to the child. Another mistake is frequently made when the adolescent begins

to indicate his desire to be independent and shows resentment of authority. The parents either become resentful and angry, or become panicky and fearful that their child is showing evidences of incorrigibility and delinquency. In either case, they fail to recognize the normalcy of this resentment and become more punishing, nagging, and restricting in their attitude, instead of allowing more liberty, responsibility and freedom. This causes the adolescent to become more and more resentful and he then tends to revolt against what he considers unjust treatment. The parents in turn become more strict and a vicious circle is established. Unless the parents can be helped to break the circle, the adolescent's resentment can become so great and uncontrollable that real revolt develops. Unless it is broken, there is also the danger that this resentment will not only be directed against the parents, but may project out to include resentment against the authority of the school and, in extreme cases, to that of the law, with resulting behavior problems and failure in school or actual delinquency. Also, as pointed out before, in some adolescents, due to inherent sensitiveness and underlying severe emotional disturbance, an even more serious complex may result from this increasing restriction by the parents. The normal and healthy desire to break away and become independent may be crushed, and a withdrawn, shy, unhappy and inadequate person may be the result.

This tendency on the part of parents to increase, rather than decrease, control and restrictions is a common and easy mistake to make. It is hard for most fathers and mothers to realize that the normal adolescent is capable of assuming a great deal of responsibility and of properly making most decisions for himself. Sometimes the decision may not be that which the parents would choose, and at times it may not be the wisest one; but, if the issue is not too important, no real harm has been done, and the youngster has had the satisfaction as well as the experience of making a decision for himself. When adolescents are allowed, insofar as possible, to make decisions for themselves, feelings of resentment which would otherwise develop are avoided. They particularly resent authority which they feel is unnecessary and unjust. It is surprising how frequently they correctly sense the difference between necessary and unnecessary parental interference.

By avoiding unnecessary issues, many feelings of guilt which would otherwise develop can be prevented. When an adolescent develops feelings of resentment toward his parents, he is very likely to think, say or do things which cause both conscious and unconscious guilt. There is not time to discuss in this paper the effect of guilt upon emotional security, but enough has been written and said about it in recent years to make it evident to all that it should be avoided whenever possible.

When parents consciously watch themselves, it is surprising to most of them to see how frequently they make issues of nonessential things and how often they correct, direct or discipline their adolescent children when it is really not necessary to do so. As a matter of fact, the same is true of children of all ages. In most instances, the issue could be avoided and the decision left up to the youngster. Certainly, in most normal adolescents such things as manners, dress, eating habits, companions, constant reporting as to where they are, time to go to bed, number of times to bathe and wash, and many other questions, can be left up to the youngster and it is surprising how well they handle the situation. The average normal adolescent is capable of taking care of most issues and decisions that arise in his daily life, and we physicians must help parents to see the wisdom and necessity of giving their children the opportunity to do so. It should be emphasized again that the decisions may not always coincide with what the parents would like themselves, but the good resulting from the avoidance of nonessential issues far outweighs the effects of an occasional mistake in judgment on important matters.

Important as it is that nonessential issues be avoided, it is equally important that those which are essential shall be met surely and firmly when they arise. It is sometimes difficult to know whether an issue is essential or nonessential, but the proper decision can usually be made if parents are objective in their approach to the question. Although the adolescent can decide adequately for himself in most instances, he is not capable of wisely making all decisions. He knows this himself, though he is usually the last to admit it. The ego of the adolescent is not strong enough to stand without occasional support. If parents do not step in when necessary, and firmly and wisely make a decision, the adolescent will be uncertain, insecure and unhappy. Feelings of guilt, anxiety and uncertainty will develop unless he knows that his parents will keep him from doing things which he himself recognizes as wrong, but which he may do if not prevented. There are times when parents must take a definite and firm stand regardless of whether the youngster can understand it or not and regardless of whether he will feel unhappy and insecure or not. To neglect to do so might be the cause of the adolescent getting into serious trouble. It is the responsibility of the parents to step in at these times and make the decision without question or argument. It should be made immediately and with absolute finality. Although the youngster should know the reasons for the decision, there should be no argument or wrangling about it.

When it becomes necessary for parents to take a stand contrary to the adolescent child's wishes, care should be taken to differentiate between the act itself and the motive behind it. What the youngster wants to do may be inadvisable, and the parents may have to refuse to let him do it. However, it may be perfectly normal and understandable that the adolescent wishes to do it, and one must not condemn him for wanting to do the particular thing that has to be forbidden. This is an easy mistake to make, but a dangerous one, as the boy or girl is bound to be extremely resentful of an unfair judgment of their motives. On the other hand, if they know their parents are understanding, they will accept a refusal of something they wish to do with much less resentment than when their motives are unjustly criticized. An example of this would be the case of an adolescent who wishes to stay out until three or four o'clock after a party. Because of health, age, or other reasons, the parents may have to refuse to

allow him to do this, but it is certainly not abnormal or wrong for the child to wish to do so. In fact, it would probably be abnormal if he did not want to. If criticized for wanting to stay out, as well as being denied the right to do so, resentment will be greater and more lasting than if he feels his parents understood his wish, even though they could not allow it.

To summarize this important question of discipline with the adolescent, avoid all nonessential issues and allow them to have as much freedom, liberty, and responsibility as possible. However, when it is necessary to take a stand upon an important issue, do so fairly, justly, and understandingly, but immediately and definitely. If parents of adolescent children who are emotionally normal and healthy will consistently handle discipline in this way, they will find that neither they nor their children will have much real difficulty with resentment of authority.

In conclusion, I wish to emphasize again the normalcy of most adolescent reactions and changes. Because of lack of knowledge and understanding of the subject, a great deal of unnecessary unhappiness and even permanent emotional trauma develop. Although there is an unusual opportunity to do constructive mental hygiene work in this age group, it has often been neglected in the past. There is a tremendous need by adolescents and their parents for the counsel, help and advice of physicians. Physicians working with adolescents will find them most appreciative, interesting and lovable, and the rewards are very great both in terms of help given, and in personal pleasure and satisfaction.

Discussion

Dr. E. M. Hammes, Saint Paul: I enjoyed Dr. Anderson's paper very much. It reminded me of what Dr. Lawson Lowrey, who established the Child Guidance Clinics in this Northwest once said—"It is wonderful how well our children develop considering the handicap we parents are." Dr. Anderson's excellent presentation is a definite challenge to both parents and medical men. The adolescent period is the most difficult period in the developing child. Fortunate indeed is the youngster whose parents can overlook the many and trivial annoyances that occur daily, and at the same time can lend a guiding hand to assist in the more serious problems, very vital in the proper emotional and moral development of this adolescent period.

Dr. C. N. Hensel, Saint Paul: Perhaps, if we had more physicians with Dr. Anderson's perception in dealing with the emotional problems of the adolescent boy and girl, we might not find so many maladjusted adults in our offices.

As I listened to Dr. Anderson's thesis, I thought to myself how lopsided is our bringing up; our parents seem to feel that if they give us a religious education and our school teachers give us proper schooling, that that is all the preparation we need in facing the problems of life.

Yet last fall, at one of our meetings, we listened to Dr. Beek's thesis on "Educational Class Therapy" in handling maladjusted adults. Quite obviously maladjusted children grow up into maladjusted adults.

Now we hear from Dr. Anderson that he is working on maladjustments in their incipiency. It seems to me that this is a tremendous field, and apparently Dr. Anderson is the first one in this community to recognize this need. He has taken compassion on the bewildered child and his equally bewildered parents and tried to help them, and now he comes to this meeting and tries to help the bewildered doctor.

I think this is a splendid presentation and very important.

Dr. F. W. Lynch, Saint Paul: Dr. Anderson deliberately avoided consideration of the physical changes which occur in adolescence, but I hope he will not mind discussion of one of these features. One might question the propriety of a dermatologist's discussing this presentation, but I believe that we see more adolescent patients than do specialists in any field other than pediatrics. Acne is extremely common, perhaps occurring in more than 90 per cent of all individuals at some time during adolesence. This is the disease which brings most adolescents to our offices. Since the condition is so common, it is difficult to evaluate the emotional factors related with its occurrence. However, when one examines patients whose acne has persisted into adult life or has developed in later years, then one can usually find evidence of both endocrine and emotional factors. It seems to me that the endocrine factors may be secondary rather than primary, and I wonder just how important the emotional factors may be in causing these eruptions, not only in the older persons but also in the adolescent individual. Some of the emotional response may be related to the parents' tendency to overemphasize hygiene and diet in these cases. Often these patients are led into the office by a dominant parent who insists on giving the history, asking and answering the questions, and taking the responsibility for treatment, leaving the adolescent individual completely helpless while in the office. Many others come in alone, without too great concern about their eruption, but forced to come because the mother or father has insisted that the adolescent take the initiative and assume responsibilities which he is not yet prepared for. These two groups will include the vast majority of the adolescents whom we see with acne.

Dr. Anderson has pointed out that the adolescent individual often responds to parental demonstrations of authority by resentment, or even revolt, and another group respond by withdrawal and the development of shyness. It is my impression that the patients with acne tend much more to fall into the latter group. It seems to me that acne is often associated with very serious emotional disturbances, and I wonder whether they may not be contributory in many instances rather than occurring as a result of the appearance of the eruption. I wish that Dr. Anderson would express his opinion as to the possible relationship of acne, adolescence and emotional difficulty.

Dr. Anderson, in closing: I wish to thank those who have spoken, for their discussions. I feel, as Dr. Lynch does, that there is a definite relationship between emotional conflict and disturbances and many of the cases of acne and urticaria. My impression is also in accordance with his that acne, by and large, is most frequently seen in the withdrawn group of children. However, one must raise the question as to whether the withdrawal is the cause or the result of the acne.

Before closing, I wish again to emphasize that adolescence should be and usually is a period of normalcy, interest and pleasure. In our dealings with young people of this age and their parents, we should endeavor to help them through by our approach and understanding of the changes and problems that arise so that they can meet them wisely. By so doing, a great deal of difficulty, unhappiness, and actual tragedy can be prevented.

The meeting was adjourned.

A. E. Cardle, M.D., *Secretary*

Minneapolis Surgical Society

Meeting of May 6, 1948

L. Haynes Fowler, M.D., Presiding

FIBROUS STERNOMASTOID "TUMORS" OF INFANCY

Their Role in the Etiology of Muscular Torticollis

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Minneapolis, Minnesota

Congenital muscular torticollis is an abnormality occurring in the newborn, the main characteristic of which consists of a tumor which involves one of the sternomastoid muscles and produces a torticollis. The salient feature for which the surgeon is called is the mass in the neck which closely resembles and often is confused with a malignant tumor. We wish to emphasize that this type of torticollis is not to be confused with the numerous other types of traumatic, infectious, neoplastic, structural or paralytic diseases, conditions which lie in the domain of the orthopedist. This condition is one of scar transformation and contraction of the sternomastoid muscle, which, if corrected surgically at an early stage in the disease, before the development of skeletal and permanent deformities, will result in a high percentage of cures. This is possible without the use of long-continued splinting, casts, or stretching maneuvers, and consequently is of importance to general surgeons who are likely to be called first to see these cases. This fact should be emphasized since it has been estimated that approximately two-thirds of all cases of fully developed torticollis result from this pathologic entity in childhood. The gross resemblance of the disease to neoplastic changes in the sternomastoid muscle is often striking and has occasionally been an additional source of confusion. In large medical centers, of course, this problem is encountered with moderate frequency by pediatric surgeons, but its relative rarity in the experience of the general surgeon seems to make this presentation worth while.

Torticollis, or "wryneck" may be the result of one or more of a host of different factors, as seen in Table I.

The type with which this discussion is concerned is the last and is of purely congenital origin. It is quite rare, occurring about once in every 150,000 births (Howell), and is only one-tenth as common as club foot. There is no racial predisposition, and it is seen in equal numbers in males and females. In a review of the literature by Hough it was found that 45 per cent are on the left side and 55 per cent on the right.

This condition rarely manifests itself at birth, but usually about the tenth to the fourteenth day there appears a hard fusiform swelling in one of the sternomastoid muscles which may reach the size of an olive.

TABLE I. CLASSIFICATION OF TORTICOLLIS

1. *Structural*
   - (a) Osseous
     - Hemivertebrae
     - Congenital fusion of cervical vertebrae
     - Klippel-Feil syndrome
     - Malformation of skull and vertebral processes
     - Cervical rib
     - Pterygium colli
     - Compensatory to structural defects of dorsal and lumbar spine
     - Spina bifida
     - Postrachitic
     - Sprengel's deformity
   - (b) Myogenic
     - Congenital absence of cervical muscles
     - Congenital hypertrophy
2. *Paralytic*
   - Erb's
   - Spasmodic
   - Anterior poliomyelitis
   - Spastic paralysis
   - Postinfectious (neuritis)
   - Post-traumatic
3. *Vascular*
   - Congenital
   - Anterior scalenus syndrome
4. *Infections*
   - Retrotonsillar abscess
   - Otitis media
   - Myositis
   - Cervical abscess
   - Spondylitis
   - Meningitis
   - Cervical adenitis
   - Retropharyngeal abscess
   - Mastoiditis
   - Infections of cervical vertebrae
   - Arthritis and synovitis
   - Cutaneous infection
   - Fascitis
   - Infections of congenital cysts and diverticula
   - Spontaneous dislocation of cervical vertebrae
5. *Traumatic*
   - Fractures and dislocations of cervical spine
   - Fractures of cranial base
   - Trauma of cervical fascia, muscles, nerves, et cetera
   - Fracture of clavicle and scapula
6. *Functional*
   - Hysterical
   - (?) Spasmodic torticollis
7. *Ocular*
   - Visual defects, corneal scars, et cetera
   - Muscular
8. *Aural*
   - Deafness
   - Vestibular
9. *Scar formation*
   - Burns
   - Trauma
   - Lupus, et cetera
10. *Neoplastic*
    - Local: Osseous, Myogenic, Lymphatic
    - Central: Vascular, Nerve
11. *Congenital*
    - Posture in utero
    - Trauma at birth
    - (?) Ischemia of muscle

Torticollis is present. The muscle feels short, fibrous and inelastic, and the head is tilted toward the affected side and the face toward the opposite. If not treated, the "tumor" gradually disappears, but the muscle remains as a fibrous cord. With growth of the neck, the torticollis increases because the sternomastoid does not lengthen. As a result of this imbalanced pull, a facial asymmetry develops, the level of the eyes changes, the clavicle and shoulder become elevated, the skull becomes foreshortened in the fronto-occipital diameter (called by some "facial scoliosis"), and the mastoid process becomes more prominent. The condition then becomes a far more serious problem and is of major orthopedic importance. This discussion does not include this type of case.

Etiology

A review of the literature indicates that there are many theories of etiology, without any general agreement, although of recent years certain theories have generally been discarded, among which may be mentioned the hereditary, neurogenic and infectious theories. For detailed discussions, reference should be made to the articles of Chandler and Altenberg, Fitz Simmons, Fisher, and Hough.

A theory which gained much support in the past was that the condition arises as a result of an actual tear in the muscle during birth, followed by a hematoma which becomes organized. More recent authors give little credence to this, because of some of the following considerations. Although it is true that a majority of these infants are born following difficult or breech deliveries, still many with the typical sternomastoid condition are born following perfectly normal deliveries. Also, the "tumor" is never noted immediately following birth, and when found at the usual ten to fourteen day interval it is always hard and fibrous, never soft or fluctuant. In addition, hemosiderin or actual hemorrhage is never seen microscopically.

The theory of occlusion of the arterial blood supply of the muscle during delivery, though popular earlier, is no longer held tenable. As Chandler and Altenberg point out, the pathologic picture in muscle following arterial occlusion is extreme atrophy and disintegration, not fibrosis.

The theory of temporary occlusion of the venous drainage of the muscle has gained much acceptance, largely because of the excellent work of Middleton, and has much to recommend it. Middleton reproduced and amplified the work of Brooks, and applied it to the problem of the etiology of muscular torticollis. He found that experimental occlusion of the venous drainage of certain muscles in dogs would initiate a process of degeneration and fibrosis which would continue even after the venous obstruction was relieved. Most authors in the recent literature accept Middleton's work as pointing to the most plausible etiology.

Chandler and Altenberg, however, felt that Middleton's work was in part fallacious in that his ideas on the blood supply of the sternomastoid muscle, based on the early work of Nove-Josserand and Viannay, were in error. According to these latter authors, the upper, middle, and lower thirds of the muscle have separate vascular supply, and there is little or no cross-communication or anastamoses between these segments. Chandler and Altenberg dissected the sternomastoid muscles of ten stillborn fetuses and felt, on the contrary, that both the arterial and venous systems showed a great deal of overlap and free cross-communications, and that there was, in general, a rich and unsegmented sort of vascular supply. They also pointed out that venous thrombosis can never be demonstrated grossly or microscopically, as would be expected were venous occlusion the predominant factor. They feel that in combination, intra-uterine malposition, trauma at birth, and possibly a pre-existing change of the involved muscle are the etiological factors of importance.

An interesting observation was made by these authors, who found in an antepartum roentgenogram that the fetus was in a breech position, with the head in right lateral flexion. The infant was delivered by Cesarean section and had a torticollis, in which, fourteen days later, the usual "tumor" developed. From this case they emphasize the point that intra-uterine torticollis could prevent engagement of the fetal head and thereby cause a breech presentation. The inference follows that in all cases of breech delivery the obstetrician and pediatrician should make a thorough inspection to detect this abnormality.

From the foregoing it seems that no one theory explains the condition and that several etiologic factors may operate to produce this deformity, such as malposition within the uterus, trauma during delivery, and local ischemia. These may each act in various degrees to cause this pathologic entity by rendering this muscle atrophic, maldeveloped, fibrosed and ultimately shortened.

Pathology

Grossly, the "tumor" is usually not a discrete one but a fusiform swelling of a goodly portion of the entire muscle, at times involving its entire length, hard in consistence, and, on cross section, white, fibrous and glistening. Microscopically the muscle cells are almost entirely replaced by dense, fibrous, collagenous connective tissue. What few muscle fibers remain are seen to be in varying stages of degeneration, with swelling and vacuolization, some with many nuclei. There is an absence of muscle striations, and changes in their staining characteristics are present. No evidence of hemorrhage nor any hemosiderin is found. In the later stages more and more of the muscle tissue disappears, and the fibrous tissue becomes increasingly dense and acellular. In the end stage, all that remains is dense inelastic hyaline connective tissue with nuclei arranged in parallel rows resembling tendon. This latter picture is that seen in older children, where the muscle is replaced by a firm fibrous cord, and is a stage with which, as pointed out earlier, the orthopedist is more concerned than the general surgeon.

Surgical Considerations

It is our feeling that if a definite "tumor" is present in the sternomastoid, it should be removed along with most of the muscle at a very early age, before it undergoes the advanced fibrous change and scar contraction

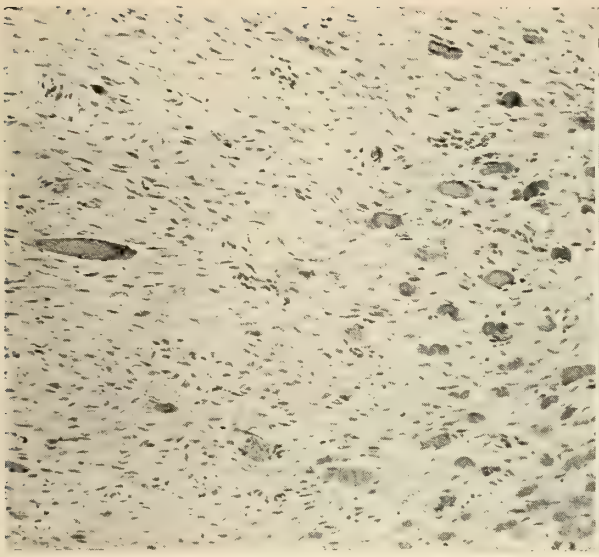


Fig. 1. This slide (magnification 65x) shows an area where muscle merges into the dense fibrous tissue. Numerous isolated degenerating bits of muscle tissue can be seen.

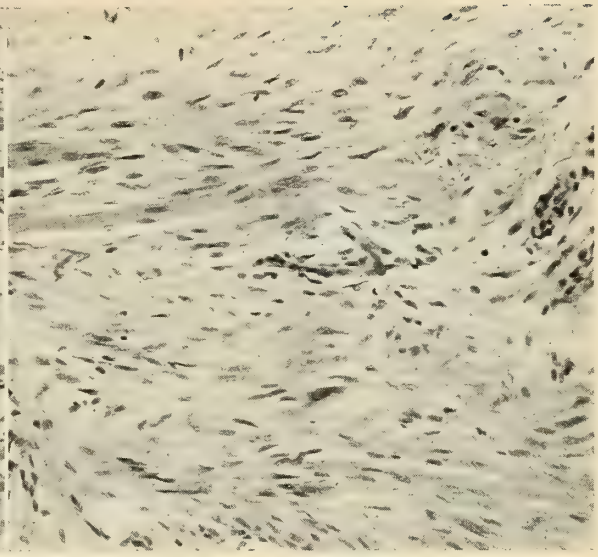


Fig. 2. This slide shows, at a somewhat higher magnification (200x), the typical picture of the central areas of the mass, namely, dense fibrous tissue. In some places the tissue is quite cellular with relatively young-looking, plump fibroblasts, and in other areas it is more compact with older-appearing collagenous connective tissue.

described. If this is allowed to take place, the child likely will develop an asymmetry of the face, with bony changes and the like, as a result of the increasing and prolonged pull of the contracted muscle. At this stage these patients are around four to five years of age and present orthopedic problems of various types and are not intended to be a part of the present paper.

Technique

In infants of but a few weeks of age, great care and caution must be exercised in removing the tumor mass. A transverse incision about one inch long is made in the lower skin crease just above the clavicle. The platysma muscle is split, and the "tumor" is then separated from adjacent structures on all surfaces by blunt dissection with a small curved forceps. The sternal portion and the clavicular portion of the muscle are isolated. A small forceps is then passed beneath the muscle, and the latter is divided by multiple transverse incisions until freed from the clavicle. The "tumor" is then elevated from the deeper structures of the neck and delivered from the wound. The spinal accessory nerve is isolated and freed by cutting through the tumor so as to spare it. The proximal portion of the "tumor" is cut across transversely at about the junction of the upper and middle third of the muscle. All bleeding points are ligated. The wound is closed by deep sutures and the skin by a subcuticular stitch. A pressure dressing is applied.

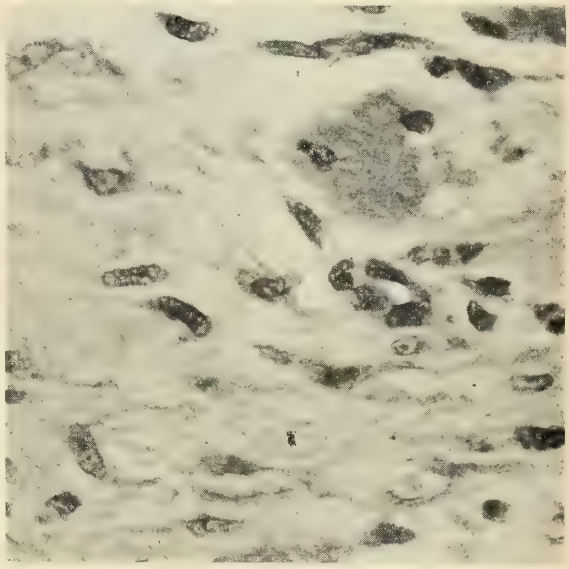


Fig. 3. This slide, taken at a magnification of 800x, well illustrates the intensely cellular character of some of the fibrous tissue, with fat nuclei and delicate collagen fibrils. Also, there is seen a bit of degenerating muscle with loss of striations and vacuolization. It is evident that the distinction between this very cellular fibrous tissue and a very low-grade fibrosarcoma might be difficult. In fact, in one of our cases, the pathologic diagnosis was the subject of a good deal of discussion before the diagnosis of fibrosarcoma was definitely discarded.

Case Reports

Individual case reports of these three infants are so similar as to preclude the necessity of relating them separately. The salient features are hereby all incorporated in the one single description to follow.

Two of the infants were four weeks old, and one was six weeks. All were males. One was born of an entirely normal birth, one of prolonged dystocia, and the third was a breech delivery following twelve hours of difficult labor, and associated with a fracture of the right humerus. All were fairly large infants weighing from 8 pounds 7 ounces to 9 pounds 10 ounces at birth. The right sternomastoid muscle was involved in each case.

The observations of the parents in each case were practically identical. When the child was two to three

weeks old there appeared a noticeable mass in the right side of the neck, associated with distress on the part of the infant when his head was turned to the left. Soon there was a definite tilting of the head to the same side as the tumor, with the chin directed to the opposite side, a position which became a constant one.



Fig. 4. One of the author's patients, two years after operation. Motions of the head and neck are perfectly free. The position of the head is due to the efforts of the photographer to display the area of operation, and not to any structural abnormality. The inconspicuousness of the scar and the lack of cosmetic defect are evident.

Routine general physical examination of all infants, including laboratory work, was negative except for the presence of a cartilaginous, hard, slightly moveable mass in the right sternomastoid muscle. It was best described at the size, shape and consistency of an olive. The head was tilted to the right, with the chin directed to the left, and movements to straighten the head were accompanied by obvious distress.

Using ether anesthesia, a one inch incision was made just above the clavicle near its medial portion, the clavicular and sternal heads of the sternomastoid muscle were detached and the mass then dissected upward. The lower two-thirds to three-fourths of the muscle was then removed, including the tumor mass. The spinal accessory nerve was preserved. Convalescence in each case was uneventful.

The specimens removed measured from 2 by 1 by 1 cm. to 3 by 2 by 1 cm., and all were of the same appearance, being greyish white in color and almost cartilaginous in consistency. On cut section of the tumor, no muscular elements could be seen grossly. On microscopic section the tissue was seen to be a dense collagenous fibrinous connective tissue with rare small bundles of degenerating muscular elements.

Result of Treatment

Follow-up of these cases by various authors ranges from a few weeks to fifteen years, and the results have been most gratifying. The deformity is corrected, and there is full range of motion of the neck. Slight flattening of the neck over the involved muscle is occasionally present but is hardly noticeable, as is also a slight prominence of the clavicle at the sternal junction where the muscle has been severed.

In the author's cases, gratifying results have been noted. The longest time elapsed is now two years, and complete cure is evident in all cases up to date (Fig. 4).

Summary and Conclusion

A firm olive-shaped "tumor" in the sternomastoid muscle of a newborn infant producing torticollis, and appearing ten to fourteen days after delivery, is a fibrous mass and not a hematoma. It frequently resembles a neoplasm in its gross aspects.

The etiology of this condition is not well understood, but one or more of several factors operate in various degrees to produce this pathologic entity. These factors are:

(1) In a uterine malposition with the head laterally flexed and the shoulder elevated, compression of the sternomastoid muscle could take place against the acromion, clavicle and humerus. By this means, interference with development of the muscle could occur, shortening it and predisposing it to birth trauma and to a breech presentation.

(2) Birth trauma due to difficult deliveries, especially those in breech presentation, could account for part of this pathologic picture. With the traction, pressure, and rotation of the neck these infants undergo, it is possible to understand how sufficient trauma to the sternomastoid muscle can occur as to result in its degeneration and fibrosis.

In about two-thirds to three-fourths of these cases there is an associated history of either a difficult or prolonged labor or a breech presentation in the birth of the infant.

The treatment of this condition is resection of the tumor and the remaining fibrous mass representing the sternomastoid muscle. This will correct the torticollis and will prevent later associated deformities of the head and face.

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Discussion

Dr. O. S. Wyatt: It is a privilege to be here. I haven't very much to add to the review Dr. Larson has given. It is an interesting anomaly, a congenital anomaly, if you wish, and I think that the etiology of it is particularly interesting. Middleton was an Englishman who did a lot of work on torticollis in 1930, and I am not so sure that his idea of the etiology is perhaps not a pretty

good one. Chandler, too, did a lot of work on torticollis, and I think he stimulated a good deal of interest in it in 1944 when he described the tumor. The type of operation he was doing at that time developed considerable interest throughout the country. Middleton could take the sartorius muscle in the dog and produce an arterial occlusion and still not produce any fibrosis. But, if you cut off the venous supply, a fibrosis will develop. Now, why do we fail to see this in a human being until fourteen days following birth? Middleton proved it impossible. If you prepare the muscle of a dog, you will not find this fibrotic development until fourteen days have gone by; therefore, I am inclined to feel that venous occlusion is probably abnormal in uterine life, and perhaps the condition develops from trauma at birth. I am not inclined to attribute too many etiological factors to the cause of this condition, because it seems to me that there must be a lot of abnormal positions in the uterus.

We don't see this condition very frequently, perhaps once in 1,500 patients, and then most frequently in breech delivery.

One must differentiate sharply, however, when dealing with congenital torticollis. Dr. Larson is not talking about the condition which orthopedists work with when those children are four, five or six years of age, when there is complete fibrosis of the muscle. He is speaking about the congenital tumor which arises in the sternocleidomastoid muscle. When you think you may be feeling glands in the neck, you are feeling this tumor, and it feels like a cartilaginous mass, about the size of an olive. We think that that is the time to remove the tumor, dissecting maybe all the muscle, maybe half and sometimes two-thirds. Those babies wear a collar for a couple of weeks and always get a nice result with good motion, and as they grow up there is no evidence of torticollis when they get to be five or six years of age.

DIAGNOSIS AND TREATMENT OF THROMBOPHLEBITIS WITH SPECIAL REFERENCE TO THE USE OF ANTICOAGULANTS

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One often reads articles about the treatment of thrombophlebitis of the lower extremities in which there is no definition of what criteria were used as a basis for including the cases. Doubtless there is a difference of opininon as to whether certain patients actually do or do not have the disease. The value of such articles on this subject might be questioned when many different examiners of varied experience have made the diagnoses upon which the results of treatment have been analyzed.

We thought it would be interesting to evaluate the various diagnostic criteria in our series of patients, at the University of Minnesota Hospitals, who were to be treated with anticoagulants wherever these drugs were not contraindicated.

All of these patients were examined personally and followed by the author, and represent all cases of thrombophlebitis in our hospital from May, 1946, to January, 1948.

From the Department of Surgery, University of Minnesota Medical School, Minneapolis.

Diagnosis

In order to be reasonably sure of the diagnosis of thrombophlebitis, we have included only those cases having at least three of the following signs and symptoms: swelling, vessel tenderness, pain, increased temperature in the limb, dilated superficial veins (unilateral), cyanosis (unilateral), pulmonary embolism (reasonably proven), and change in temperature and pulse (otherwise unexplained). Where unilateral swelling was found alone, or in cases of pulmonary embolism alone without leg signs or symptoms, the cases were followed but not included in this series. In three instances, patients with pulmonary embolism alone developed signs and symptoms of thrombosis in four to five days, and thus were included in the study.

Swelling was the most frequent sign in this series. It occurred in ninety-three (88.5 per cent) of the extremities.

Tenderness was next to swelling in frequency. It occurred in seventy-nine extremities (75 per cent).

Deep calf tenderness, elicited by pressing between the gastrocnemius muscle bellies in the calf, was found to be the most frequent and consistent of deep vessel signs in our series, being present in seventy (66.55 per cent) of the extremities.

Calf-squeeze tenderness is elicited by gently squeezing the calf from side to side. Its value has been stressed by Moses.[11] While probably not as significant as deep calf tenderness, it is an important maneuver in substantiating deep vein involvement when used with the deep calf pressure. It was found in fifty-six (53 per cent) of the extremities.

Homan's sign[6] is the presence of pain in the calf elicited by passive dorsiflexion of the foot. In all of these maneuvers for deep vein tenderness, one must remember to keep the knee flexed, thereby relaxing the calf muscles. This sign was found to be positive in fifty-two (49.5 per cent) of the extremities. Aside from the fact that this sign is the least frequent of the signs mentioned here, we feel it is much less reliable for routine examination because of the great possibility of its being positive with simple muscle involvement alone. It involves mostly muscle stretching and deep vein pressure only secondarily, whereas the calf squeeze and especially the deep calf maneuvers involve more direct pressure over the vessels in question, mainly the posterior tibial and calf veins where most thromboses probably begin.

Popliteal tenderness was sought in all cases and was found in only seventeen instances, and never without other tenderness. This would lead one to believe that it is of limited value as a diagnostic sign.

Anterior tibial tenderness was found in only two instances. Involvement of the anterior tibial veins in thrombosis is not frequent but has been found to be present in a number of instances. This was indicated by fairly definite venographic studies done by the author in patients with chronic deep thrombophlebitis and in a few of the cases in this series. The infrequency of anterior tibial vein involvement might be due to the fact that these vessels do not drain large venous lakes as do the posterior tibials from the calf muscle group.

Frykholm[5] has proposed that collapse of veins with contiguity of vein walls is causative in thrombosis of the deep leg veins in bedridden patients. The anterior tibial vessels are protected from such pressure by their anatomical position.

Produnda femoris involvement, frequently overlooked, has been emphasized by Homans. It is elicited by grasping the biceps femoris muscles and squeezing moderately. In our series none of the twelve cases having profunda femoris tenderness had it as the only sign of tenderness in the extremity. It is quite possible that such thrombosis might conceivably exist alone, but from our observations to date, it would seem to be rare.

We have found that a temperature difference of 3° to 4° F. can be determined fairly consistently by simple palpation. Except for a few instances where an electrothermocouple was used, palpation was used for determining increased temperature, and only definite differences are included.

In fifty-four instances (53 per cent) there was an appreciable temperature increase in the affected limb.

Pain was present in fifty-four patients at rest. Many more had pain in the calf only on walking. A few of the patients described their discomfort on walking as tightness rather than pain. This was noted especially in patients with a high level of thrombosis, as in the iliofemoral thromboses. These patients complained of tightness in the thigh as well as in the calf.

The dusky color often described as a concomitant of thrombophlebitis was noted in only four of our cases.

The presence of dilated superficial veins is sometimes of use in making a diagnosis of deep vein thrombosis. This finding was only noted in three cases in this series. We believe from our experience with patients studied prior to this series and subsequent to it, that this dilatation of the superficial vessels occurs at least twice as often as recorded here.

The sural veins are veins draining the posterior muscle group of the leg. In two cases there was found a simple sural vein thrombosis with surrounding induration of the calf. These thrombi can often be felt on one or both sides of the upper calf just below the knee. This condition should not be treated lightly and is as important as any other deep thrombophlebitis or thrombosis, for such thromboses progress as a rule to involvement of the popliteal vein and from there on up. Many of our cases of deep thrombosis had induration of the calf, probably due to a blocking of the sural veins as they enter the popliteal.

Treatment

It is obvious that the treatment of venous thrombosis of the lower extremities should be directed at (1) the prevention of propagation of an existing clot, (2) the prevention of embolization, and (3) keeping the patient as comfortable as possible both during and after such treatment.

At the beginning of this study it was decided that all patients with thrombophlebitis in the University Hospital would be treated by anticoagulants unless they were particularly unsuited to this form of treatment by virtue of certain contraindications, such as subacute bacterial endocarditis, renal or hepatic disease, bleeding lesions, preoperative to major surgery where in the opinion of the surgeon anticoagulants were not desirable, and in postoperative cases where large bare bleeding surfaces were to be expected.

It was also decided that these patients would be treated with bed rest in moderate Trendelenburg position (the foot of the bed on 4 to 6 inch blocks) as soon as the diagnosis of thrombophlebitis was made. This method of care was prompted by the work of Bauer,[3] who showed fairly conclusively that the rate of venous blood flow was increased by this position, keeping the veins small and free from stasis or laking. The purpose of this procedure is to reduce to a minimum the chances of propagation of thrombi already formed and to discourage new thrombus formation further than might be done by the anticoagulants. It is granted that this procedure colors the total picture. This study was begun when the use of anticoagulants was not as well accepted as it is now, and an added safety factor was thought advisable.

Other points decided on at the beginning of the study were that no patient should receive sympathetic blocks, local or reflex heat or other forms of therapy directed at the thrombophlebitis.

One patient received repeated sympathetic blocks for concomitant or primary peripheral arterial embolism.

Heparin

Since the original work of Murray and MacKenzie[12] and of Crafoord and Jorpes, heparin has come into clinical use increasingly, both as a prophylaxis against primary thrombosis and as a preventive against propagation of the thrombosis already existant.

This drug was used in fifty-four of our cases, exclusively in eight, and with dicumarol in forty-six:

In the first twenty-five cases in which heparin was used, the patients were given this drug intravenously every three hours. An attempt was made to keep the hour-and-a-half clotting time at two to three times the control's or the patient's normal. The majority of this group required 50 mg. of heparin intravenously every three hours to maintain this level of clotting time. A few cases required as much as 60 to 70 mg. for the same effect.

Bauer recommended a dosage of 50 mg. every four hours during the day and 100 mg. at midnight. His series had such obviously good results that we decided to try this method of treatment with heparin, and up to the end of this series of cases had put twenty-five patients on this regimen. In this group, the peak of the clotting time was usually at one and one-half hours and was normal again at four hours.

Clotting times were taken before starting heparin, and then in the early cases every half hour after each dose for two to three doses. It became apparent quite early that the clotting time was down to normal within three to four hours after each injection of 50 mg. and well within eight hours after the 100 mg. midnight dose. This midnight dose of 100 mg. was used merely because we wished to give Bauer's method a fair trial. In only one case in our group was the clotting time

elevated eight hours after the midnight 100 mg. dose.

We tried heparin in Pitkins menstruum in several cases, as recommended by Loewe et al,[9] but could only reproduce his result with twice the dose he recommended. Our experience with this method consists of some dozen patients and is probably too small to draw any just conclusions.

Dicumarol

The action of dicumarol, as described by Link,[8] is primarily on the liver, inhibiting its formation of prothrombin. The anticoagulant effect of dicumarol results only from the diminution in the available prothrombin usually necessary to clot formation. Admittedly it is a potentially dangerous drug when its action depends on the irregularities of intestinal absorption and a special effect on the liver's prothrombin production. For these reasons one must be prepared to follow prothrombin times regularly and to combat the possible results of occasional unpredictable prothrombin depletion that may result before attempting the use of this drug as outlined below.

This anticoagulant was used in seventy-seven of our cases. We gave the average case 300 mg. of dicumarol the first day (100 mg. per 50 pounds of body weight), 200 mg. the second day (two-thirds of the initial dose), and 100 mg. on the third day (one-third the initial dose) providing the prothrombin ratio (control; patient) was not 1.5 or higher. On the second day, dosage was divided into 100 mg. for morning and evening doses. This allowed us to get a little longer spread of our therapeutic level of prothrombin ratio from the initial dosages.

In the early part of our experience with dicumarol we noticed some instances of bleeding from the mucous membranes, wounds, kidneys and so forth. During this time we were keeping our prothrombin ratios between four to five times the normal. As can be expected by the curves of Quick,[13] the prothrombin time shot to extremely high levels, and in some instances the plasma could not be made to clot. In these cases vitamin K, in doses of 72 mg. intravenously, was given, and usually the prothrombin time returned to reasonable levels within ten to twelve hours, and on repeating this dose (if necessary), in another ten to twelve hours the prothrombin time would be normal and stay that way without further dosage. We found also that whole blood transfusions would bring the prothrombin time down, but the longest effect we were able to demonstrate was nine and one-half hours, after which time the prothrombin time gradually returned to a high level. The higher the prothrombin time, the more blood it took to bring the prothrombin time back to normal. Fresh blood was much more potent in this effect than blood twenty-four hours old or older.

In a few cases secondary operative procedures were found necessary after patients had received dicumarol, such as drainage of subphrenic abscesses, et cetera. For these cases, it usually sufficed to give the patient one fresh whole blood transfusion two to three hours prior to operation, so that the prothrombin time was close to normal at the time of the procedure and remained so for eight to nine hours and then rose again. With one patient being treated prophylactically and prepared as outlined above, subphrenic exploration was attended by a good deal of bleeding, and the patient required another transfusion before it was controlled.

After changing our treatment to keeping the prothrombin ratio between two to three times the normal, the incidence of significant bleeding all but disappeared, save for an occasional microscopic or transient gross hematuria.

Duration of Anticoagulant Therapy

The patients with pulmonary embolism were treated the longest. These comprised the group having between fourteen and twenty-one days of dicumarol treatment in therapeutic range.

We attempted to keep our nonembolism patients in range for fourteen days and the embolism patients in range for twenty-one days. The nonembolism patients were ambulated with ace bandage support as soon as all signs and symptoms were negative (usually by the seventh day) and were kept in therapeutic range until treated for fourteen days. The pulmonary embolism cases were kept in bed for at least ten and, in most cases, fourteen days, and kept in therapeutic range until a total of twenty-one days of therapy was reached.

Femoral Vein Ligation

Eight patients in this series had common femoral vein ligations in the presence of one or another of the contraindications mentioned above for the use of anticoagulants.

Pulmonary Embolism

There were twenty-seven patients in this series who had pulmonary embolism. These represent 29 per cent of the entire group. This figure is a little less than the 33 per cent found for untreated cases in a similar group by Welch and Faxon[15] and by Allen.[1] Twenty-one or 78 per cent of these patients already had a pulmonary embolism by the time treatment could be begun.

Six patients developed pulmonary embolism while actually on anticoagulant therapy. These cannot all be considered to have had adequate treatment, however. Four patients had their pulmonary embolism on the first or second day after starting the treatment and so were, in a sense, not adequately treated. These four patients, added to the twenty-one who had pulmonary embolism to begin with, makes twenty-five (92 per cent) of this group who had pulmonary embolism before anticoagulant treatment could become effective.

There were five deaths in our series. In only one of these can we consider pulmonary embolism as the primary cause. All of these patients were seriously ill and, except for one, died gradual deaths from causes other than pulmonary embolism. Three of these patients, however, were found to have pulmonary emboli at autopsy although the emboli were not thought to be the cause of death.

According to the data presented by Welch and Faxon,[15] about 30 per cent of the patients who have one pulmonary embolus from a thrombophlebitis will have

another. They also indicate that out of this group of patients with one embolus, about 25 per cent will have a fatal embolus. In our series there were only two secondary pumonary emboli, and neither of these was fatal.

In nineteen of our patients there were x-ray findings characteristic of pulmonary embolism. Most of the emboli produced x-ray evidence on the right side and showed a preference for the lower lobes. This has been observed and commented on by Roesseler,[14] Allen[2] and others.

A good portion (70 per cent) of the patients had chest pain and hemoptysis. Chest pain was the most common symptom. An occasional patient did not cough bloody sputum for several days, and others had cough without sputum and some neither.

Hemorrhagic Manifestations

Except for a post-transurethral-prostatectomy patient, urinary bleeding was not a source of concern in this group, even though grossly visible in eight cases. In all except two patients no change was made in the treatment and no special measures taken to stop the bleeding. In all of these it cleared up spontaneously within three days.

Peculiar hemorrhagic skin lesions in our patients treated with dicumarol have been observed. These lesions have been accompanied by a burning pain and extreme tenderness. All have healed spontaneously within ten days. No other skin lesions have been noted in our dicumarol-treated patients suggestive of sensitivity or toxicity attributable to dicumarol.

Associated or Primary Conditions

There were nine cases (10 per cent) where deep thrombophlebitis was the primary disease. Careful historical and physical examinations revealed no other significant concomitant disease.

The high incidence of thrombophlebitis in patients with cancer has long been noted[10] and is seen in our study also. In patients with thrombophlebitis one should always suspect and look for a neoplastic process when there seems no apparent causative factor for the thrombosis. In one of our patients it was not until postmortem examination that a carcinoma of the pancreas was found. Cancer was a concomitant or primary disease in thirty-eight of our cases. Forty-one per cent of our patients were treated postoperatively, and, of these, twenty-four had cancer. In all of the patients operated in our hospital during the period of our study, twice as many who had cancer developed thrombophlebitis as those who had no cancer.

Two patients were pregnant when they developed thrombophlebitis of the lower extremities and were given full courses of anticoagulant therapy. Their prothrombin times were back to normal three weeks prior to delivery.

Two other patients developed thrombophlebitis of the lower extremities in the immediate postpartum period and were also treated with anticoagulants under our regimen and recovered without event. We have treated several patients to date with anticoagulants prophylactically in the immediate postpartum period without event. In view of the current controversy in the literature regarding the possible effect of dicumarol on the newborn, none of the mothers were allowed to nurse their babies until their prothrombin time had returned to normal.

During the same period as our study there were sixty hip operations for fracture in our hospital. Four (6.77 per cent) of these developed thrombophlebitis.

A great number of our patients had cardiac disease along with their other difficulties, but no special effort was made to correlate this finding as a separate entity.

As has been noted by Dennis,[4] the incidence of thrombophlebitis in ulcerative colitis is about 30 per cent. In full cognizance of this fact, all ulcerative colitis patients operated in our hospital for ileostomy are given prophylactic anticoagulants. As a result, none of our ulcerative colitis patients having ileostomy operations has developed thrombophlebitis since instituting this prophylaxis.

Summary and Conclusions

The diagnostic signs were evaluated in ninety-two patients (105 extremities) having thrombophlebitis of the lower extremities in an eighteen-month period at the University of Minnesota Hospitals, and it became apparent that the most significant findings were those of swelling, tenderness, temperature changes and pain, in this order.

The most frequently positive and probably the most significant sign of deep vein involvement was deep vein tenderness. Tenderness on calf squeeze was found to be the next most frequent sign and was of appreciable significance in making an early diagnosis of thrombophlebitis.

Color changes, dilatation of superficial vessels and change in vital signs are a definite aid in making the diagnosis, but are of somewhat less significance due to their relative infrequency.

We have presented a method of treatment of deep vein thrombophlebitis with heparin and dicumarol and bed rest in the Trendelenburg position. It is our opinion that this is a rational way of treating most cases of deep vein thrombophlebitis.

The use of anticoagulants in our patients has reduced the incidence of secondary pulmonary embolism from an expected 30 per cent to 2.17 per cent. It has reduced the incidence of secondary fatal embolism from an expected 25 per cent to zero.

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Discussion

DR. VERNON SMITH: Thank you very much for the privilege of being here. About a year and a half ago, we started treating patients over forty years of age who had cancer, hysterectomies, hernioplasties, hip fixations, and so forth, prophylactically with dicumarol. We gave them 200 mg. immediately after operation, then approximately 100 mg. daily, depending upon the prothrombin time. We tried to maintain their prothrombin time in the neighborhood of 25 per cent. Even with the prothrombin time above this level we experienced hemorrhage of the pericardial sac on two occasions, hemorrhage from the bladder on one occasion, and hemorrhage from the wound on two occasions. These hemorrhage complications we treated with large doses of Vitamin K, 72 mg. intravenously, and with repeated whole fresh blood transfusions.

A patient who had had a previous embolus after major surgery some four years before was treated with heparin immediately postoperatively after a bilateral hernioplasty. He was given 50 mg. of heparin every four hours intravenously. Three hours after the second dose of heparin, the patient had severe hemorrhages into both of his hernioplasty wounds, and the heparin was stopped at once.

A second patient who had had a previous nonfatal embolus several years before, following a hysterectomy, was treated prophylactically with dicumarol after a cholecystectomy a few months ago. Her prothrombin time was maintained in the neighborhood of 25 per cent. On her seventh postoperative day she developed a sudden severe pain in the right chest posteriorly. Since this was exactly the same postoperative day on which she had developed her previous embolus, and since the patient was quite apprehensive and nervous, we were not certain whether or not this was a pulmonary embolism. There was no x-ray evidence of the same. There was little blood pressure and pulse change. There was no bloody sputum. The patient had been ambulant since the day of surgery. She was treated that night with oxygen and papaverine intravenously but was kept ambulant. The next day the patient's pain disappeared and she had no further interference with her convalescence.

Since we have been following the prophylactic treatment of these patients who are most apt to develop thrombophlebitis or phlebothrombosis, we have seen no pulmonary embolic phenomena of which we are absolutely certain. We have seen no out-and-out thrombophlebitis. There were three patients who might have had a phlebothrombosis involving the deep veins of the calf. Their only symptom was pain on deep muscle palpation and pain on walking. In two of these patients, the pain disappeared after lumbar sympathetic block. The prothrombin times of these patients were maintained around 25 per cent, and they were kept ambulant; no further sequelae developed.

Outside of the occasional case of hemorrhage (3 per cent) that one sees following the prophylactic use of dicumarol or heparin, the only other disadvantages are the expense of the medication (nil with dicumarol), the expense of the laboratory tests, and the pain experienced due to repeated vena punctures.

I believe the time is coming when most of the patients over forty years of age, with carcinoma, hysterectomy, hernioplasty, fractured hip, and so forth, will be treated prophylactically with anticoagulation therapy.

DR. D. A. FELDER: Dr. Smith's experience with the cholecystectomy patient who had the pulmonary embolism is an interesting one. I do not think that dicumarol is the answer to the question of anticoagulants, nor do I think that anticoagulants are the answer to the question of abnormal blood clotting. It is a wonder that we don't get more pulmonary embolism in patients treated prophylactically with dicumarol because, as I mentioned before, dicumarol only cuts down the available prothrombin. Unless the effect is exceptional, such a patient's blood will still clot.

Postoperative ambulation is sometimes merely a description of what may consist of sitting up in a chair for some time on the day of operation and every day thereafter. If anything did predispose to abormal blood clotting, this should. Many patients who have gotten out of bed "early" have been harmed rather than helped. I believe patients must move about for early ambulation to be of benefit. I trust that Doctor Smith's patient was truly ambulatory.

The newer drugs that are coming into use in this field of anticoagulants may help to solve our problem. Heparin is much better than dicumarol, due to its over-all effect on the clotting mechanism. Yet its action is fleeting, and so a prolonged effect is not attainable. There are investigations going on at present with the newer drugs along this line. Dicumarol medication is controlled by the prothrombin time, which is not too satisfactory. After all, prothrombin determinations are indirect measures, and the patient's clotting time might well be different than indicated by the prothrombin determination.

DR. H. O. MCPHEETERS: I would like to compliment Dr. Felder on the fine paper. It was very well prepared and deliberate. What did he say about the percentage of swelling found in his cases?

DR. FELDER: Ninety-three of the cases, or 88.5 per cent.

DR. MCPHEETERS: I am going to take issue with him on the use of lumbar block in the phlebitis case that has a cold, clammy, swollen leg. That type of case will have a fine reaction after a lumbar block. The skin will warm up, and the edema will rapidly disappear.

DR. FELDER: Dr. McPheeters has a much larger and wider experience than I do, and I cannot argue with that experience, but I do know that our patients did well and we did not treat them with sympathetic blocks. Had we done so, their discomfort would have been less probably and we might have changed their course.

DR. C. DENNIS: I would like to say one thing about the simplicity of prophylactic treatment in patients undergoing ileostomy for ulcerative colitis. We don't check the prothrombin time except prior to administration of the drug. With two or three exceptions we have given a single dose of dicumarol. The dose was usually either 200 mgs. or 300 mgs., administered the night before the operation. In twenty cases thus treated, none developed pulmonary embolism or thrombophlebitis. Three patients during this time presented prolonged prothrombin times, and there was enough evidence of liver damage so that dicumarol was not given. All developed one complication after another, and all three died of pulmonary embolism.

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Reports and Announcements

RADIO PROGRAM

Following are the titles of the broadcast to be presented in "Let's Talk About Health" by Dr. D. A. Dukelow on KUOM, the University of the Air.

1948

Nov. 1—"Polio" Problems
Nov. 8—Mental Hygiene
Nov. 15—Medical Education
Nov. 22—A Century of Public Health
Nov. 29—Tuberculosis—The Christmas Seal Story
Dec. 6—County Health Departments
Dec. 13—Why Kill Our Children?
Dec. 20—Your Christmas Presents
Dec. 27—New Year's Resolutions

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY

The seventh annual meeting of the American Academy of Dermatology and Syphilology will be held in Chicago from Saturday, December 4, through Thursday, December 9, 1948.

The principal sessions will be held at the Palmer House, with special courses in histopathology and mycology scheduled for Saturday and Sunday, December 4 and 5, at the Medical Schools of the University of Illinois and Northwestern University. As in the past two years, teaching clinics will be held on the afternoons of Monday, Tuesday, and Wednesday, December 6, 7, and 8. A new feature is being added to the program this year consisting of informal discussion groups, which will be held at noon and 5:00 P.M. sessions.

Officers of the Academy are: President, Dr. Clyde L. Cummer, Cleveland, Ohio; Vice President, Dr. Francis E. Senear, Chicago, Ill.; and Secretary-Treasurer, Dr. Earl D. Osborne, 471 Delaware Ave., Buffalo, New York.

AMERICAN ACADEMY OF GENERAL PRACTICE

The first annual meeting of the American Academy of General Practice will be held March 7, 8 and 9, 1949, at the Netherlands Plaza Hotel in Cincinnati, Ohio.

The Congress of Delegates will meet at 10 A.M., Sunday, March 6, 1949, preceding the Assembly, and again on Tuesday afternoon, March 8. Scientific papers will be presented on Monday and Tuesday and on Wednesday morning. The presidents and secretaries of the constituent state chapters will meet at dinner on Monday evening, and the banquet will be held on Tuesday evening.

No registration fee will be required of members. Non-members are welcome to attend the sessions and will be charged a registration fee of $5.00.

Members wishing to make reservations may write Chairman, Subcommittee on Hotels, American Academy of General Practice, Dixie Terminal Building, Cincinnati 2, Ohio.

MINNESOTA HEART ASSOCIATION

Members of the Minnesota Heart Association automatically become members of the American Heart Association and receive the monthly publication, "Modern Concepts of Cardiovascular Disease" published by the latter association. Membership dues are annual, $5.00; sustaining, $25.00; contributing, $100; and patron, $1,000. Members of the association are entitled to attend scientific sessions of the association without additional cost.

Physicians willing to display a heart-shaped plastic coin collection device in their reception rooms during the state and national heart fund campaign, February 7-28, 1949, to provide funds for research and education in cardiovascular disease, a fund-raising method approved by the House of Delegates at the last State Medical Association meeting, should communicate with Dr. Paul F. Dwan, president of the Minnesota Heart Association, 2000 Medical Arts Building, Minneapolis 2, Minnesota. Already, scheduled under "sponsorship" of the Heart Association is a two-day continuation course in cardiovascular disease to be held at the University of Minnesota, February 14 and 15, 1949.

ST. LOUIS COUNTY SOCIETY

The first meeting in the 1948-49 season of the St. Louis County Medical Society was held in St. Mary's Hospital, Duluth, on September 9.

Included in the business session of the group was a report by Dr. L. A. Barney, Duluth, chairman of a committee studying county medical fees. During the scientific session, a motion picture, "Problem Child," produced under the authority of the American Academy of Pediatrics, was shown. Dr. R. O. Bergan, Duluth, served as moderator during the showing of the film. In charge of the meeting was Dr. P. S. Rudie, Duluth, president of the organization.

SOUTHWESTERN MINNESOTA SOCIETY

The Southwestern Minnesota Medical Society held its annual series of scientific meetings this fall at Worthington. Evening meetings were held each week from September 13 to November 1 and were addressed by Dr. Lyle Hay, Chief Surgeon, Veterans Hospital, Minneapolis; Dr. Arnold Kremen, University Medical School; Dr. Francis W. Lynch, Saint Paul; Dr. John F. Pohl, Minneapolis; Dr. Lee Forrest Hill, Des Moines, and Dr. T. R. Fritsche, New Ulm.

WABASHA COUNTY SOCIETY

The eightieth annual meeting of the Wabasha County Medical Society was held in Lake City on October 7, with thirty persons, including members' wives and guests, in attendance.

The following officers were elected at a business session of the group: Dr. T. G. Wellman, Lake City, president; Dr. L. M. Ekstrand, Wabasha, vice president,

(Continued on Page 1256)



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*Albrecht, F. K.: Modern Management in Clinical Medicine, Baltimore, The Williams and Wilkins Co., 1946, p. 170.

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and Dr. W. F. Wilson, Lake City, secretary-treasurer. Dr. E. C. Bayley, Lake City, was elected as delegate to the Minnesota State Medical Association, with Dr. R. A. Glabe, Plainview, as alternate. Named as censor for three years was Dr. B. J. Bouquet, Wabasha, while censors holding over were Dr. T. G. Wellman, Lake City, and Dr. E. W. Ellis, Elgin. It was decided to hold the next annual meeting at Plainview.

The evening program consisted of the following: the President's Address, "Pericarditis," by Dr. R. N. Bowers, Lake City; a talk on "Relations of the Medical Profession to National Defense," by Dr. Jan H. Tillisch, Rochester; and a motion picture entitled "Energy Release from Food," presented by the Upjohn Company.

UPPER MISSISSIPPI SOCIETY

The summer meeting of the Upper Mississippi Medical Society, held at Birchmont Lodge, Bemidji, on September 11, was attended by thirty physicians. In charge of the meeting were Dr. D. H. Garlock, Bemidji, president of the society, and Dr. G. I. Badeaux, Brainerd, secretary.

The following papers were presented on the scientific program: "The Physiologic Approach to the Treatment of Nasal Conditions," by Dr. C. L. Oppegaard, Crookston; "Cancer of the Colon," by Dr. Lloyd A. Whitesell, Minneapolis; "Hematic Reactions Following Drug Therapy," by Dr. William A. Coventry, Duluth; and "Acute Conditions of the Gastrointestinal Tract," by Dr. William V. Knoll, Duluth.

WASHINGTON COUNTY SOCIETY

At the Washington County Medical Society meeting, September 14, 1948, a lively discussion took place on the proposal of the Washington County Welfare Board to reduce the fee for doctors' hospital calls on welfare patients from $1.25 to $1.00 per call. This constitutes a reduction from the $1.25 for similar services allowed by the Division of Social Welfare of the State of Minnesota, and both fees are much below the minimum fee schedule of the Washington County Medical Society and other county societies in the state. The society voted unanimously to decline the reduction, and a letter was sent to the Washington County Welfare Board, as a notification of this action, explaining that such fees are out of line with costs for less important services, such as changing a tire or replacing a washer on a faucet.

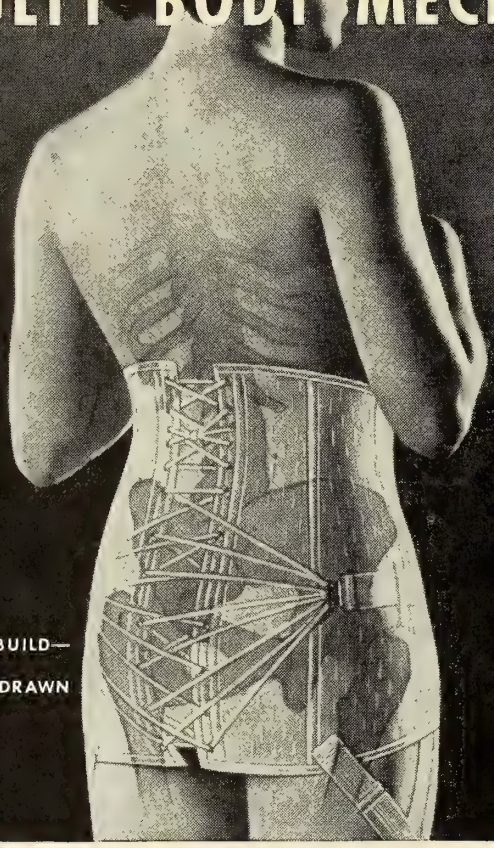
Dr. William Bernstein of Saint Paul gave an illustrated talk on "Proctological Conditions of Interest to the General Practitioner."

At the meeting held October 12, 1948, the Society voted to accept the proposal of the Red Cross to establish a blood bank in Saint Paul.

Dr. James Edward Jenson, who has recently become associated with Dr. J. W. Stuhr, was elected to membership in the society.

Society members enjoyed an interesting address by Dr. Roger Howell, associate professor of psychiatry at the University of Minnesota on the subject, "Psychosomatic Medicine."

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Woman's Auxiliary

HEALTH DAYS PROFITABLE IN MINNESOTA THIS FALL

Mrs. Harold F. Wahlquist

Health Days have been very profitable and fashionable in Minnesota this fall. As president of the State Auxiliary, I have had the privilege of representing our members at meetings in Willmar, Fergus Falls, Crookston, Mankato, and Duluth. Hundreds of citizens from counties in these trade areas flock to High School or Armory auditoriums to hear talks and partake in discussions of their local health problems. Health Days were co-sponsored by the State Auxiliary, the State Medical Association and the State Department of Health. The programs were planned, with the assistance of local committees, to include discussions of health problems particularly relating to immediate community needs. Gov. Luther Youngdahl was a featured speaker at the evening meetings. It is our hope that Mrs. Hobart Johnson, state public relations chairman, will assist in evaluating these meetings for our next issue.

Two County Auxiliaries have joined our forces this fall. McLeod County was organized September 16, with Mrs. A. M. Jensen of Brownton as president, and Clay-Becker, October 6, with Mrs. C. W. Moberg of Detroit Lakes as president. Both Auxiliaries have planned challenging programs for this year, and we are delighted to have them as part of our State Auxiliary.

The following members have been ratified as state standing committee chairmen for the year 1948-49:

Regional Advisers: Mrs. C. C. Allen, Austin, first district; Mrs. S. A. Slater, Worthington, second; Mrs. O. B. Fesenmaier, New Ulm, third; Mrs. A. A. Passer, Olivia, fourth; Mrs. C. Harry Ghent, Saint Paul, fifth; Mrs. Frederick H. K. Schaaf, Minneapolis, sixth; Mrs. R. N. Jones, Saint Cloud, seventh; Mrs. C. L. Oppegaard, Crookston, eighth; Mrs. Anthony J. Bianco, Duluth, ninth.

Advisory Committee: Mrs. Martin Nordland, Minneapolis; Mrs. E. V. Goltz, Saint Paul; Mrs. J. F. Norman, Crookston; Mrs. M. A. Nicholson, Duluth; Mrs. Melvin Henderson, Rochester.

Committee Chairmen: Mrs. Howard Satterlee, Lewiston, Archives; Mrs. W. H. Von Der Weyer, Saint Paul, Bulletin; Mrs. Mark E. Ryan, Saint Paul, Cancer; Mrs. Benjamin Souster, Saint Paul, Editor—MINNESOTA MEDICINE; Mrs. Bernard O'Reilley, Saint Paul, Emergency Nursing; Mrs. Joseph M. Neal, Saint Paul, Finance; Mrs. C. L. Sheedy, Austin, Hygeia; Mrs. Elmer Rusten, Wayzata, Legislation; Mrs. Harlow Hanson, Minneapolis, Medical and Surgical Relief; Mrs. H. E. Bakkila, Duluth, Organization; Mrs. N. O. Pearce, Minneapolis, Press and Publicity; Mrs. A. Christiansen, Saint Paul, Printing; Mrs. David Halpern, Brewster, Program and Health Education; Mrs. Hobart Johnson, Mankato, Public Relations; Mrs. F. W. Franchere, Lake Crystal, Resolutions; Mrs. Neil Dungay, Northfield, Revisions; Mrs. O. I. Sohlberg, Saint Paul, Mrs. Karl Wold, Saint Paul, Mrs. W. N. Graves, Duluth, Mrs. M. McC. Fischer, Duluth, Mrs. A. N. Bessesen, Jr., Minneapolis, Mrs. A. E. Cardle, Minneapolis, Mrs. L. P. Powell, Rochester, Social.

Special Committees: Mrs. Leonard S. Arling, Minneapolis, News Letter; Mrs. Walter K. Haven, Minneapolis, Workshop; Mrs. Harold G. Benjamin, Saint Louis Park, Roster; Mrs. S. S. Hesselgrave, Center City, Parliamentarian.

State Medical Advisory Council: Dr. Gaylord Anderson, Saint Paul; Dr. R. N. Barr, Minneapolis; Dr. Reuben Erickson, Minneapolis; Dr. Fred Magney, Duluth; R. R. Rosell, Saint Paul.

HEALTH WORKSHOP HELD SEPTEMBER 24

Mrs. Leonard Arling

Minnesota physicians' wives held an all-day Workshop, September 24, at the Hotel Radisson, to perfect themselves in their role of medical public relations workers.

Urged by Dr. A. E. Cardle, president of the Minnesota State Medical Association, to refrain from putting Auxiliary work on a "tea party level," and to inform themselves to "speak upon such issues as socialized medicine," they were told that the government has spent $75,000,000 trying to indoctrinate the people of this country with the idea of socalized medicine and that only through the efforts of those far-sighted enough to realize the inevitable results of compulsory health insurance, will the idea be defeated.

Amplifying the responsibilities of the Auxiliary, Lawrence W. Rember, executive assistant, American Medical Association, declared, "Personal contact is not enough. You must employ the channels of mass communication."

"Raise your voice, cast your ballot," he continued. "Make sure the voice of medicine is speaking as one." Mr. Rember advocated state medical journals and other publications as good sources of information and complimented the Minnesota Auxiliary on its Workshop plan—"the first I've heard of anywhere in the nation."

He added that the Auxiliary had assumed national importance as a pioneer in public relations work through the leadership of Mrs. Harold F. Wahlquist, who retired from her post as national chairman of public relations to accept the State Auxiliary presidency.

The women were asked by Reuben F. Erickson, M.D., chairman of the Minnesota State Medical Association's Committee on Public Policy, to adopt the committee's five-point program: (1) information and education for the public, (2) co-operation with other professional and lay groups, (3) encouragement of agencies promot-

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(Continued from Page 1258)

ing voluntary prepayment for sickness insurance, (4) opposition of all legislation injurious to the best type of medical practice in Minnesota, and (5) uniting in the promotion of legislation which will further the best type of medical and hospital care.

Dr. Erickson specified four points to consider in prepayment plans for sickness insurance: free choice of physician, the doctor-patient relationship, highest type medical care, representation of physicians on the governing board.

Round tables on Auxiliary organization techniques closed the morning session and, following the luncheon, the Auxiliary resumed general sessions with a panel discussion on "Mediums for Furthering the Community Health Program." Miss Margaret Reagen, director of public relations, Minnesota Hospital Service, and Minnesota Medical Service Associations, moderated the discussions. Participants were: Gisela Konopka, University of Minnesota professor; Otto Silha, promotion Manager, Minneapolis *Star-Tribune;* Ben Leighton, KSTP; Thomas G. Hull, Ph.D., director, Bureau of Exhibits, American Medical Association; William Griffiths, director, public health education, Minnesota Department of Health; Paul C. Leck, M.D., chairman, committee on Rural Medical Service, Minnesota State Medical Association.

At the dinner meeting, Auxiliary members were guests of the State Medical Association and heard John O. Christianson, D.Sc., superintendent of the University of Minnesota's School of Agriculture, describe his recent European tour. Briefly noting conditions abroad, Dr. Christianson defined Communism as "a mental disease." "We must keep ourselves strong," he asserted. "We have so much to learn and so little time left."

Mrs. Luther H. Kice, national Auxiliary president, commended the organization for its "eager and serious efforts on behalf of the medical profession" and told members of the Auxiliary that "the eyes of the world are on this organization."

ROUND-TABLE DISCUSSIONS INCLUDED IN WORKSHOP

Mrs. David J. Halpern

Seeking the means for a firmer relation between the medical profession and the public, Auxiliary members held a round-table discussion on Program and Health Education during the day-long Auxiliary Workshop, September 24.

At the session the women resolved to become acquainted with every doctor's wife in their communities and to equip themselves with information concerning the medical profession. Typical of the information necessary, it was agreed, are the following: medical and health legislation, national health problems, mental hygiene clinics in rural areas, prepayment health plans, the AMA ten-point program, use of animals in medical experimentation, programs of national health organizations, such as tuberculosis, infantile paralysis and cancer, the rural health program of the Medical Association.

Sources of such information were listed as: packet sent to all County Auxiliaries, complete condensation of legislation of the 80th Congress, *Hygeia* magazine, the *Bulletin of the Woman's Auxiliary to the American Medical Association,* the *News Letters* sent by Mrs. Wahlquist and her committee.

Two programs which the women felt deserved their immedate attention were: the recruitment of nurses and the promotion of a radio-speaking project for junior and senior high school students on "What You Can Do About Tuberculosis." (The ten best scripts will be broadcast over WCCO and local stations.) Recruitment of nurses may be implemented by radio programs, posters, literature to counsellors in high schools, movies, sponsoring of scholarships, distribution of new brochure available from the Minnesota Nurses Association. Doctors' wives are planning teas at local hospitals, with tours to follow and agreed to seek the co-operation of druggists, the Farm Bureau, and other groups and organizations.

SOUTHWESTERN AUXILIARY HOLDS SIX-COUNTY MEETING

Mrs. O. M. Heiberg

The Auxiliary to the Southwetsern Minnesota Medical Society invited members of the Business and Professional Women's Club, the American Association of University Women and the League of Women Voters from this six-county area, as well as nurses from the Ninth District Nurses Association to hear Mrs. Elmer Rusten of Minneapolis speak on October 11, on important health legislation. A social hour followed. Among the guests of honor were: Mrs. Harold F. Wahlquist, president of the Woman's Auxiliary to the Minnesota State Medical Association, and Mrs. C. C. Allen of Austin, regional adviser, first district.

The responsibility for planning and providing adequate hospital facilities for the tuberculous is a public, not a private obligation.—A. W. Fiske (Ohio State Representative) *Ohio Pub. Health,* September, 1948.

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In Memoriam

ANDREW B. RIVERS

Dr. Andrew B. Rivers, fifty-three years old, died suddenly of a heart attack, October 3, 1948, while attending Mass at St. Mary's Hospital chapel.

Dr. Rivers was a native of Rollingstone, in Winona County, where he was born December 10, 1894. He entered the Mayo Foundation as a fellow in medicine, January 15, 1920, and was appointed first assistant in medicine, July 1, 1923. Later he was named associate in medicine, his main interest being gastroenterology.

He attended St. Francis College, St. Francis, Wisconsin, from 1906 to 1913, and received the M.D. degree in 1917 from Creighton University. He served as an intern at the City and County Hospital in Saint Paul until October, 1918, when he entered the medical corps of the United States Navy as a lieutenant and was stationed at the marine barracks at Norfolk, Virginia.

After the war, Dr. Rivers was an assistant in medicine at the University of Minnesota until he came to Rochester in 1920.

In World War II, Dr. Rivers commanded the medical battalion of the Minnesota defense force with the rank of lieutenant colonel. Functioning with the medical battalion was the nurse corps battalion including units in Minneapolis, Saint Paul, Duluth and Rochester.

He was appointed commanding officer of the state battalion by Adjutant General E. A. Walsh.

Close friends of Dr. Rivers included prominent Notre Dame football coaches, the late Knute Rockne, Hunk Anderson and Frank Leahy, present coach.

In 1929, he received the degree of M.S. in medicine from the University of Minnesota and of M.A. from St. Francis College in 1930. He was a fellow of the American College of Physicians and American Medical Association and member of the American Gastro-Enterological Association, Olmsted-Houston-Fillmore-Dodge County Medical Society, and the Minnesota State Medical Association. He was also a member of the Clinical Research Club, Sigma Xi, Phi Beta Pi and Alumni Association of the Mayo Foundation.

In November, 1927, he married Madalyn D. Smith of Hillsboro, Texas. Mrs. Rivers survives him; also a daughter, Marilyn, student at the University of Minnesota, and a sister, Angela Rivers, of Rollingstone.

LUDVIG R. LIMA

Dr. Ludwig R. Lima of Montevideo, Minnesota, died of a heart attack on September 4, 1948, at his home.

Dr. Lima was born at Stavanger, Norway, on April 30, 1877. At the age of seventeen, he came to this country to join two brothers who were farming near Coopers-

Fifth CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE

March 1, 2, 3, 4, 1949

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town, North Dakota. He received his education at Sandness, Norway, and at Augsburg College in Minneapolis, where he received the degree of B.A. in 1899. He graduated from Hamline Medical College in 1903 and interned at the City and County Hospital in Saint Paul.

On September 25, 1904, he was married to Constance Bergh at Audubon, Minnesota, and practiced for a year at Everett, Washington. He then located at Montevideo. Three years later he spent a year in postgraduate study in Vienna. During World War I, he served in the army medical corps. Dr. Lima was a member of the Camp Release Medical Society, the Minnesota State and American Medical Associations.

He is survived by his widow, a son, Dr. L. R. Lima, Jr., of Montevideo, and two daughters, Mrs. William Owens of Montevideo and Mrs. Brunhild Brown of Minneapolis.

JOHN THEODORE SCHLESSELMAN

Dr. J. T. Schlesselman of Mankato, Minnesota, died suddenly from a heart attack on September 6, 1948. He had been a prominent eye, ear, nose and throat specialist and civic leader for many years.

Dr. Schlesselman was born in Reynolds, Indiana, January 21, 1877. He obtained a B.S. degree from Concordia College, Fort Wayne, Indiana, in 1890, and his M.D. degree from the Cleveland University of Medicine and Surgery in 1898. His internship was served at the Huron Street Hospital in Cleveland.

From 1900 to 1920, he practiced at Good Thunder, Minnesota, taking postgraduate work in the Chicago Eye, Ear, Nose and Throat College in 1914, at the New York Postgraduate Medical School in 1915, at the Manhattan Eye, Ear, Nose and Throat College in 1919. In 1926 he spent three months in Vienna.

Dr. Schlesselman was president of the Southern Minnesota Medical Association in 1931 and a former president of the Blue Earth County Medical Society.

In July, 1948, he completed fifty years of practice.

Dr. Schlesselman was married on September 3, 1903, to Elsa Darge, who survives him, as do also two sons, Harold R. Schlesselman of Mankato and Dr. Edward A. Schlesselman of Fresno, California. A brother, George H. Schlesselman, practices in Anoka.

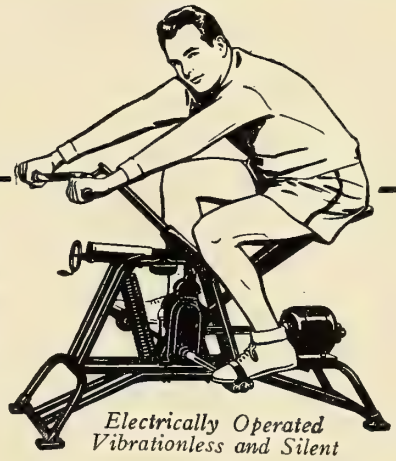
Dr. Schlesselman was much interested in reforestation and was considered an authority on the subject. He was active in Mankato community affairs, having served as president of the Mankato Chamber of Commerce in 1936 and 1937, and as president of the Mankato Lions Club in 1931 and 1932. He was a member of the Lutheran Church.

DAVID L. TILDERQUIST

Dr. David L. Tilderquist, a physician in Duluth for the past forty-four years, died September 29, 1948, at the age of seventy-six.

Born in Vasa, Minnesota, October 22, 1871, Dr. Tilderquist attended Gustavus Adolphus College and the University of Minnesota, where he received his medical degree in 1903. In 1910, he took postgraduate work in

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Vienna. He served as chief of the eye, ear, nose and throat services at Saint Luke's and Saint Mary's Hospitals in Duluth.

Dr. Tilderquist belonged to the Saint Louis County Medical Society, the Minnesota State and American Medical Associations, was a member of the American Academy of Ophthalmology and at the time of his death was vice president of the Minnesota Academy of Ophthalmology. He was also a past president of the organization.

He was active in church work and served on the board of foreign missions of the Augustana Lutheran church. For his contributions to special scholarship funds at Gustavus Adolphus College, he was presented with the Greater Gustavus Association award.

Dr. Tilderquist is survived by three sisters, Eva and Ida of Duluth and Mrs. Ernest Rupert of Seattle, Washington.

MELVIN A. VOGTEL

Dr. Melvin A. Vogtel, of Minneapolis, passed away August 30, 1948, at the age of fifty-eight.

Dr. Vogtel was born in New Ulm, September 26, 1891. After graduating from Rush Medical College in 1916, he practiced in Winthrop, Minnesota, for two and a half years before moving to Minneapolis.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, and Phi Gamma Delta, undergraduate medical society.

Dr. Vogtel married Beatrice Black in Chicago on June 10, 1916. He is survived by his widow, his mother, Mrs. Charles Vogtel of New Ulm, a daughter, Mrs. Gerhard Becker of Chicago, and a brother, Harold Vogtel of Fort Worth, Texas.

MORRILL EDWIN WITHROW

Dr. M. E. Withrow, for forty-five years a practitioner at International Falls, Minnesota, died October 12, 1948. He was seventy-eight years of age.

Dr. Withrow was born in Stillwater, August 21, 1870. He obtained his M.D. degree at Hamline Medical School in 1897, and interned at the Minnesota State Prison for two years. He practiced for nine months at Forest Lake, Minnesota, and at Grantsburg, Wisconsin, for a brief period before moving to International Falls in 1903.

He was one time mayor of International Falls and had been health officer since 1908. He was also active in State American Legion affairs and in the Masonic Order. He was a member of the Upper Mississippi Medical Society, the Minnesota State and American Medical Associations.

Dr. Withrow was married to Agatha Mahoney of Anoka. He is survived by his wife, three sons and three daughters.

ERRATUM

Through a regrettable error, we reported in our September issue the death of Dr. Arthur J. G. Henderson of North Saint Paul. We hasten to correct the report, for Dr. Henderson is very much alive. Our apologies are extended to Dr. Henderson. We hope he will sustain no serious embarrassment as the result of our error.

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Communication

FEE SCHEDULE

At the request of Dr. Donald McCarthy, Retiring Branch Medical Director of the Veterans Administration, we are publishing a letter written by Dr. Paul B. Magnuson, Chief Medical Director of the Veterans Administration, to Dr. Morris Fishbein, Editor of *The Journal of the American Medical Association,* dated April 27, 1948. The letter appeared in *The Journal of the American Medical Association* of May 22, 1948. It explains the difficulty in establishing a fee schedule satisfactory to physicians throughout the country and to the Veterans Bureau and how the schedule was finally established, and disclaims charges that the Bureau was arbitrary in adopting a schedule.

VETERANS ADMINISTRATION
Washington 25, D. C.
April 27, 1948

Dr. Morris Fishbein
Editor, The Journal AMA
535 North Dearborn Street
Chicago, Illinois

Dear Dr. Fishbein:

It has come to my attention that considerable misunderstanding has developed throughout the medical profession concerning the establishment of fees for medical services to be paid private physicians participating in the so-called "Home Town Medical Care Program for Veterans." It has been contended that the Veterans Administration has arbitrarily established a Fee Schedule which represents the maximum amount which may be paid for any given service and which is, in effect, a National Fee Schedule. It has also been contended that the various State Medical Societies and other interested groups were not consulted when the Fee Schedule was adopted.

In order to clear up any misunderstanding regarding this matter, it is desired to emphasize that my predecessor Dr. Paul R. Hawley, had no intention at any time of establishing a National Schedule of Fees, nor do I contemplate doing so. However, the Fee Schedules originally submitted by the various State Medical Societies, when the "Home Town Medical Care Program" was inaugurated, varied so widely in format, terminology, and fees for similar or identical services, that it was deemed advisable to establish a uniform Fee Schedule Format and to set up tentative fees which could be used as a guide by the various State Medical Societies when submitting their proposals for the furnishing of medical care to veterans.

This uniform Fee Schedule Format was formulated by the Professional Group of National Consultants to the Chief Medical Director. This Group, representing the various specialties in medicine and surgery, is composed of eminent physicians from all parts of the country. Tentative fees were set up in the format after a careful analysis of Pre-Paid Medical Care Plan, Workmen's Compensation and Insurance Fee Schedules, and also the Fee Schedules in effect in the various States having agreements with the Veterans Administration. As was to be expected, considerable variation occurred in the Fee Schedules reviewed.

The Professional Group of National Consultants made



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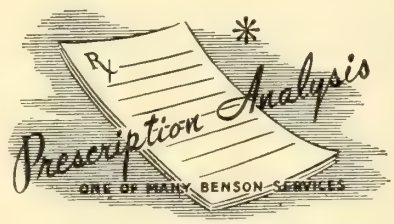
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every effort to arrive at fees that were considered to be within reasonable limits and which would, as nearly as possible, allow a uniform provisional fee schedule for use as a guide in facilitating and expediting the preparation of agreements between State Medical Societies and the Veterans Administration.

Further attempt was made to provide for elasticity in the charges for certain operations or other services which seemed to evoke more than average contention by listing the minimum and maximum amounts considered equitable. These items bear the notation "AA," which indicates that the fee for the given service is to be determined by arbitration and agreement between the Veterans Administration and the Medical Society concerned.

May I reiterate that the Veterans Administration Fee Schedule Format is in no sense to be construed as an arbitrary or National Fee Schedule. Furthermore, it is subject to periodic review and such modification as conditions may indicate.

If it meets with your approval, I would appreciate it very much if you could possibly arrange to publish this as an open letter in the *Journal of the American Medical Association.* I should like this to reach all of the physicians throughout the country, and I know of no better way to do it than through the *Journal.*

Very truly yours,
PAUL B. MAGNUSON
Chief Medical Director

Health education is recognized as an essential tool in tuberculosis control. The general public must know the seriousness of the disease and its cost in human misery and money before it will accept its responsibility to support the work financially. Report, Expert Committee on Tuberculosis, Office International de'Hygien Publique, Paris, *Pub. Health Rep.,* May 7, 1948.

Of General Interest

Dr. Walter Lee, Madison, has been appointed medical advisor for the Lac Qui Parle County draft board.

* * *

Dr. W. R. Humphrey, Stillwater, has returned from Virginia, his native state, where he recently spent a brief vacation.

* * *

The appointment of Dr. P. A. Mattison, Winona, to the Winona board of education was approved by the board at its monthly meeting on September 13.

* * *

At a meeting of the Rotary Club in Wadena, on September 1, the principal speaker was Dr. J. S. Grogan, retired Wadena physician.

* * *

Principal speaker at a meeting of the Range Medical Society in Hibbing on September 29 was Dr. S. S. Houkom, orthopedic surgeon from the Duluth Clinic. Dr. Frank Kochevar, Eveleth, presided at the meeting.

* * *

Dr. Harold R. Hennessy, former resident of Two Harbors, now living in Chicago, was recently appointed to the newly created office of secretary of the AMA Council on National Emergency Medical Service.

Among the speakers at the West Central Minnesota Health Day, held on September 9 in Willmar, was Dr. Harry Evenson of Sacred Heart, who discussed "Health Problems in West Central Minnesota."

* * *

Dr. Arrah Evarts, Rochester, has been appointed state chairman of the health and safety committee of the Minnesota Federation of Business and Professional Women's Clubs, it was announced early in September.

* * *

On September 7, Dr. I. L. Mitby of Aitkin was appointed by the county board of commissioners to serve on the Aitkin-Deerwood Sanatorium board, succeeding the late Dr. M. Frederickson of Aitkin.

* * *

Dr. F. W. Wittich, Minneapolis, was among the speakers who addressed the Medical Society of Delaware at its annual convention, September 14 and 15, at Rehoboth Beach, Delaware.

* * *

Dr. C. L. Oppegaard, Crookston, was the principal speaker at a meeting of the Lions Club in Crookston on September 27. He spoke on two topics, first dis-

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cussing various phases of allergic diseases, then commenting on the possibility of having a school for the feeble-minded established in the city.

* * *

In September, Dr. Bjarne Houkom, Minneapolis, sailed for the Orient. He planned to spend three months in Hong Kong before going to Bombay, India, to study eye diseases. Before returning to Minneapolis he will visit in England and the Scandinavian countries.

* * *

Dr. George Janda, formerly of Saint Paul, moved to Bertha late in September to join the staff of the Will Clinic. A graduate of the University of Minnesota Medical School, Dr. Janda recently completed his internship at St. Luke's Hospital, Duluth.

* * *

The largest watermelon in Arkansas, weighing 96 pounds, was sent to Dr. V. S. Counseller, Rochester, in September by a former patient, from whom Dr. Counseller had excised a 50-pound tumor, the largest in his experience.

* * *

Dr. Hanns Schwyzer, son of the late Dr. Arnold Schwyzer of Saint Paul, recently became associated in practice with Dr. Martin Nordland and Dr. Martin A. Nordland at 1737 Medical Arts Building, Minneapolis.

* * *

Principal speaker at a meeting of the Arrowhead Society of Medical Technologists, held in St. Luke's Hospital, Duluth, on September 30, was Dr. S. H. Boyer, Jr., of Duluth, who spoke on the subject, "Rheumatic Fever."

* * *

Dr. Carl J. Fritsche of New Ulm has been appointed medical advisor for the Brown County Selective Service Board, it was announced on September 25. The appointment was made by the state director of Selective Service.

* * *

One of the speakers at the Red River Valley Health Day, held in Crookston on October 7, was Dr. O. F. Mellby, health officer of Thief River Falls, who took part in a panel discussion on "Our Community Health Problems."

* * *

Dr. Luther Nelson, formerly of Wadena and at present a resident physician at Bethesda Hospital, Saint Paul, was married on August 19 to Miss Ellen Olson, a nurse at Abbott Hospital. The ceremony took place in Atwater, Miss Olson's former home.

* * *

Among speakers at the annual membership meeting of the Minnesota Division of the American Cancer Society, held at the University of Minnesota on October 1, were Dr. A. E. Cardle, president of the Minnesota State Medical Association; Dr. Owen H. Wangensteen, head of the University's department of surgery, and Dr. Arthur H. Wells, president of the Minnesota Division.



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Dr. John J. Satory, formerly of Wabasha, together with Dr. Paul D. Anderson and Dr. Robert L. Gilbert, have organized the Grandview Clinic in LaCrosse, Wisconsin. Dr. Satory is a graduate of the University of Minnesota Medical School.

* * *

Dr. Lewis B. Wollner of Rochester has been awarded a prize of $300 for his research on cancer cells in bronchial secretion, and Dr. Charles A. Owen, also with the Mayo Foundation, was recently awarded $150 for research in the conversion of prothrombin into thrombin by the Alumni Association of the Mayo Foundation.

* * *

Dr. Ralph Rossen, medical superintendent at the Hastings State Hospital, spoke to staff members of the Red Wing State Training School at a meeting on September 22. Dr. Rossen discussed the psychiatric study of boys. The meeting was the first of a series of training sessions for the school employes.

* * *

Dr. D. C. Anderson, after practicing in Lamberton for five years, announced late in September that he was moving to Olivia to establish a practice there. His practice in Lamberton was purchased by Dr. Mortin Roan, formerly of Minneapolis, who planned to begin his duties in Lamberton on October 9.

* * *

Dr. O. A. Kabrick, formerly of Jackson, became resident physician at the St. Peter State Hospital early in September. Dr. Kabrick, who has practiced medicine since 1906, was associated with Dr. W. H. Halloran in Jackson for four and a half years before moving to St. Peter.

* * *

Dr. E. L. Tuohy and Dr. Henry G. Moehring, Duluth, conducted a clinico-roentgen-pathological conference at the annual joint fall meeting of the Saint Louis County and Range Medical Societies on October 14. They presented a similar conference at the recent meeting of the Northern Minnesota Medical Association.

* * *

Dr. S. E. Friefeld, radiologist at Wadena since July, 1946, will leave the last week in December to accept a staff position in a Duluth hospital. Dr. Friefeld was associated with the Wesley Hospital in Wadena, and also at hospitals in Breckenridge, Detroit Lakes, Perham, Long Prairie, Thief River Falls and Fergus Falls.

* * *

Dr. H. W. Meyerding, Rochester, gave the presidential address and presented a paper at the fourth Congress of the International Society of Orthopaedic Surgery and Traumatology, held in Amsterdam, Netherlands, during the middle of September. The paper which he presented was written in collaboration with Dr. E. C. Elkins, also of Rochester.

* * *

In Mountain Lake during September, the offices of Dr. P. J. Pankratz and Dr. John R. Schmidt underwent extensive remodeling and enlarging. About 500 square feet of floor space were added by reconstructing part of the building behind the old offices. The additional

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* * *

Dr. Earl C. Elkins, consultant in physical medicine at the Mayo Clinic, was named president-elect of the American Congress of Physical Medicine at the twenty-sixth annual meeting of the organization in Washington, D. C., on September 9. He will be inducted as president at the annual meeting in 1949. Dr. Elkins has been a member of the Mayo Clinic staff for ten years.

* * *

Dr. Tracy E. Barber, of the Austin Clinic, has been engaged as the new medical director of the Hormel Company, it was announced on September 7. Dr. Barber succeeds the late Dr. H. B. Allen. A graduate of the Medical College of Temple University, and a naval veteran, Dr. Barber has practiced in Austin since 1946.

* * *

Dr. John F. Fulton, Sterling, professor of physiology at the Yale University School of Medicine, received the decoration of Honorary Officer of the Civil Division of the Most Excellent Order of the British Empire from the British Ambassador to the United States, Sir Oliver Frank, at the British Embassy in Washington, D. C., on July 23, 1948.

* * *

Due to incorrect information, it was stated in the September issue that Dr. Russell J. Kotval, a dentist, was opening a medical-dental clinic in Fairmont with Dr. Jerome L. Behounek, a physician. Further information reveals that Dr. Behounek is a dentist and that Dr. Kotval, a graduate of the University of Minnesota Medical School, is conducting a medical practice at 121½ West Main, Pipestone.

* * *

The second annual meeting of the Minnesota Public Health Conference was held on October 8 at the Saint Paul Hotel in Saint Paul. The main feature of the afternoon session was a panel discussion of "The Establishment of Full-Time Local Health Departments in Minnesota." At the evening banquet the toastmaster was Dr. Mario Fischer, director of public health, Duluth.

* * *

After being associated in practice with Dr. H. B. Ewens in Virginia since 1938, Dr. John S. Siegel announced on September 8 that he was opening offices in Virginia to conduct a private practice. A graduate of the University of Minnesota in 1937, Dr. Siegel has taken postgraduate work at the Cook County Hospital Graduate School of Medicine, the University of Illinois and the University of Minnesota.

* * *

Dr. Ronald W. Barr, formerly of Sioux Falls, South Dakota, began practice in Hills during the first week of September. At first, while still living in Sioux Falls, he was in Hills for only three days each week but has now moved to the Minnesota community, to conduct a daily practice in a newly constructed office. Previous to Dr. Barr's arrival, Hills had been need of a local physician for several years.

* * *

The first meeting of the thirty-eighth semiannual postgraduate extension course of the Lyon-Lincoln Medical Society was held in Marshall on September 21. The lecturer for the evening was Dr. George Usterman, Rochester, who discussed diagnosis and treatment of gastrointestinal diseases. At the second meeting of the course, on September 28, Dr. Haddow M. Keith, Rochester, spoke on "Brain Tumors in Children and Allied Neurological Conditions."

* * *

Dr. Philip S. Hench, Rochester, was one of ten physicians and scientists named at a meeting in Chicago on September 16 to a committee which will guide the medical policies of a newly established Arthritis and Rheumatism Foundation. The Foundation will raise funds for research and treatment of arthritis and rheumatic diseases. Dr. Hench is a past-president of the American Rheumatism Association, which sponsored the meeting at which the committee was named.

* * *

Friends of Dr. Andrew Gullixson, Albert Lea, gathered on September 20 to honor the physician and his wife for their many years of service to the community. Dr. and Mrs. Gullixson planned to leave Albert Lea on September 25 to establish permanent residence in Long Mont.

Dr. Gullixson practiced in the Albert Lea area for more than forty years. During the past few years he has lived in semi-retirement, compiling a book about the medical profession in Freeborn County prior to 1900.



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A county-wide free immunization clinic for residents of Wilkin County began on September 13 when the first clinic was held at Breckenridge. On successive days for a week, immunization clinics were conducted in other key cities in the county. Smallpox vaccination and immunization for diphtheria, tetanus and whooping cough were available to all persons from six months of age to twenty-one years. The county-wide clinic was the first of a series and will be conducted every five years.

* * *

The Arlington Municipal Hospital announced the appointment of Dr. Milo A. Youel to its surgical staff early in September. A graduate of the University of Minnesota Medical School in 1939, Dr. Youel interned at the U. S. Naval Hospital in San Diego, California, then served overseas in the navy. He has taken postgraduate training in surgery at the University of Minnesota and at the Minneapolis Veterans Hospital. In Arlington he is associated in practice with Dr. Verne Schulberg.

* * *

A former staff member of the Veterans Hospital at St. Cloud, Dr. M. B. Dahle, purchased the practice of the late Dr. A. A. Passer in Olivia and expected to begin practice there on September 15. Dr. Dahle, a graduate of the University of Chicago, served his internship at Asbury Hospital, Minneapolis, and then practiced at a clinic in Glenwood for three years. After four years of military service, he took postgraduate work in Chicago, then began his duties at the St. Cloud Veterans Hospital.

* * *

Dr. and Mrs. E. Q. Ertel, Ellendale, were honored guests at a testimonial banquet on October 6 on their fortieth anniversary of community service. Many close friends and men in the medical profession from surrounding towns were present, and telegrams of congratulation were received from those who were unable to attend. Dr. and Mrs. Ertel were presented with a number of gifts, and the doctor was the recipient of Citizenship Medals from the local Veterans of Foreign Wars and the American Legion Posts.

* * *

In early September the name of the More Clinic in Eveleth was changed to the More-Ewens Clinic, with the staff increased to six physicians and services extended to Eveleth, Virginia and Gilbert. Reason for the change was the combining of the More Clinic with the clinic previously operated in Virginia by Dr. H. B. Ewens. The staff of the More-Ewens Clinic now includes Dr. Ewens, Dr. F. R. Kotchevar, Dr. M. L. Strathern, Dr. W. C. Lovshin, Dr. Alfred Marcia and Dr. Terrance D. Callan. No change has been made in the name of the More Hospital, which is operated by the More Hospital Association, a nonprofit organization.

* * *

It was announced early in September that the AMA Council on Medical Education and Hospitals had approved the University of Minnesota's course in occupational therapy. The first class to complete the course, which requires four and one-fourth years of classroom and technical training, was graduated last June. At the



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Surgical Technique, Surgical Anatomy and Clinical Surgery, four weeks starting November 8, February 7, March 7.

Surgical Anatomy and Clinical Surgery, two weeks, starting November 22, February 21, March 21.

Surgery of Colon and Rectum, one week, starting March 7, April 18.

Surgical Pathology every two weeks.

GYNECOLOGY—Intensive Course, two weeks, starting February 21, March 21.
Vaginal Approach to Pelvic Surgery, one week, starting February 14.

OBSTETRICS—Intensive Course, two weeks, starting March 7.

MEDICINE—Intensive Course, two weeks, starting April 4.
Personal Course in Gastroscopy, two weeks, starting April 18.

DERMATOLOGY—Formal Course, two weeks, starting April 18. Clinical Course every two weeks.

CYTOSCOPY—Ten-day Practical Course every two weeks.

ROENTGENOLOGY—Lecture and Diagnostic Course, two weeks, starting the first Monday of every month. Clinical Course starting the third Monday of every month.

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University of Minnesota Hospitals, there is an occupational therapy clinic for hospital patients and outpatients, as well as a bedside occupational therapy service for patients confined to bed. Made available also to psychiatric patients is an extensive occupational therapy program.

* * *

Dr. A. C. Broders, Sr., of the Mayo Clinic, was honored with several scientific and medical memberships in South America on a recent trip. He was made a corresponding member of the Association Medica Argentina and the Asociacion Medica Argentina Sociedad de Anatomia Normaly Pathologica, and an honorary member of the Academia Nacional de Medicina de Buenos Aires and the Sociedad de Anatomia Normaly Pathologica de Chile. He was also made an honorary member of the faculty of biology and medical sciences of the University of Chile, one of five North Americans to receive this honor.

* * *

From January 1, 1948, through September 28, 1948, the Minnesota Department of Health received reports of 804 cases of poliomyelitis in Minnesota, with 44 deaths. Twenty-seven cases in out-of-state residents, with three deaths, were also reported. About 120 of the cases were reported in July, 335 in August, and 325 in September (1-28). In Hennepin County there were 135 cases, in Faribault 88, in Freeborn 83, in Ramsey 69, in Mower 31, in Steele 27, in Rock 25, in Nobles 23, in Stearns 22, in Anoka 19, and in Wright 17. In past years Minnesota has had 912 cases with 105 deaths in 1916, 955 cases with 145 deaths in 1925, 811 cases with 66 deaths in 1931, and 2,881 cases with 226 deaths in 1946.

* * *

Dr. George Freeman, superintendent of the St. Peter State Hospital for twenty-three years, resigned effective October 1 to become superintendent of the state hospital at Warm Springs, Montana. He was succeeded by Dr. Burton P. Grimes, former assistant superintendent of the St. Peter institution.

Dr. Freeman, in moving to Montana, ends forty-two years of service in Minnesota state institutions. He began his career as a staff member at the St. Peter hospital, later became superintendent of the Willmar State Hospital, and in 1925 assumed the superintendency of the St. Peter institution. Dr. Grimes, the new superintendent at St. Peter, has served as assistant superintendent since 1946 and was a member of the medical staff from 1937 to 1940.

* * *

Cottonwood County was awarded accreditation certificates for its accomplishments in tuberculosis control at a ceremony in Windom on September 21. Dr. S. A. Slater, superintendent of the Southwestern Minnesota Sanatorium, presented certificates awarded by the Minnesota State Medical Association and the Minnesota Department of Health, while special Christmas Seal plaques were presented by Dr. E. A. Meyerding, executive secretary of the Minnesota Public Health Association. A county is accredited when its tuberculosis death rate drops to an average of 10 or less per 100,000 population for a five-year period and when not more than 15 per cent of its high school seniors react positively to the tuberculin test. Cottonwood is the sixteenth county in Minnesota to be so accredited.

* * *

The Hospital Clinic at Austin has a new member on its staff, Dr. H. P. Limbacher, who is the surgeon for the group. Dr. Limbacher interned at Saint Luke's Hospital, Cleveland, and served a residency at Lakewood City Hospital, Lakewood, Ohio. He served three of his five years in the Army in World War II in the European theater. He has qualified for the American College of Surgeons and the American Board of Surgery having completed a two-year fellowship in general surgery at the Cleveland Clinic and then terminating his training as a surgical resident of the Cleveland State Hospital which is affiliated with the department of surgery of the Western Reserve University. He is a member of Theta Kappa Psi medical fraternity, the Cleveland Academy of Medicine and the Ohio State Medical Association.

* * *

Dr. Thomas J. Kinsella of Minneapolis has been elected president of the Mayo Foundation Alumni Association. He succeeds Dr. E. E. Larson of Los Angeles. Dr. Donald C. Balfour again was named honorary president. The new first vice president is Dr. John M. Fallon, Worcester, Massachusetts, and the new second vice president, Dr. John L. Kleinheksel, Wichita, Kansas. Dr. James F. Weir and Dr. Edward S. Judd, both of Roch-



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ester, return to the offices of secretary, and assistant secretary and treasurer, respectively. Dr. J. Minott Stickney, Rochester, filled the vacancy on the Board of Governors. The five new members of the advisory board whose terms expire in 1951 are Drs. Conrad J. Baumgartner, Beverly Hills, California, Louis D. McGuire, Omaha, Nebraska, Minard Jacobs, Oklahoma City, Oklahoma, George V. Lynch, Oshkosh, Wisconsin, and Harry A. Collins, Des Moines, Iowa.

* * *

Among Minnesota physicians who attended a two-week continuation course in psychosomatic medicine at the University of Minnesota during the latter part of September were Dr. Russel E. Carlson, Stillwater; Dr. Sidney F. Becker, Bemidji; Dr. Donald S. Branham, Albert Lea; Dr. J. L. Baker, Fergus Falls; Dr. R. F. Mears, Northfield; Dr. Rudolph Wilkowske, Owatonna, and Dr. A. F. Risser, Stewartville.

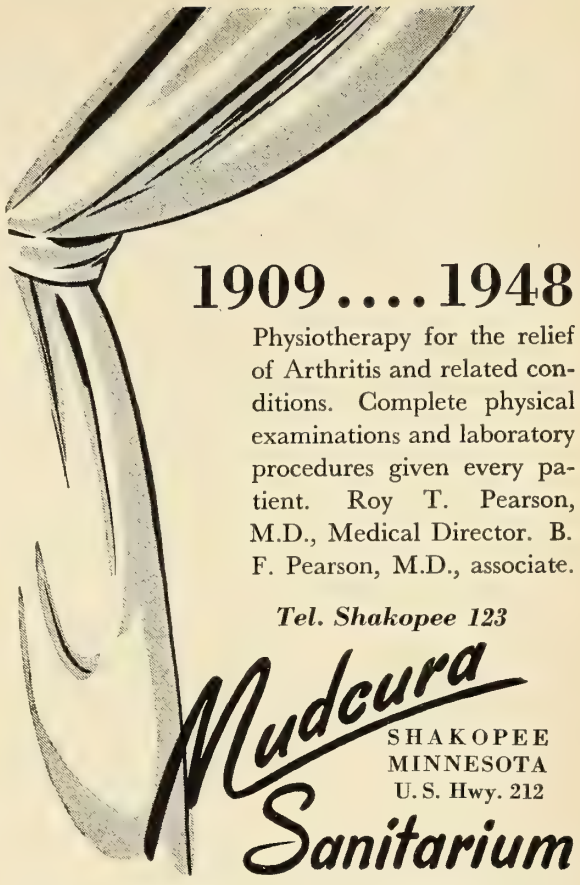
Subjects covered in the course, which was under the direction of Dr. George N. Aagaard, director of postgraduate medical education at the University of Minnesota, included emotional growth and development, child-parent relationships, the concept of normal and neurotic anxiety, the structure and meaning of a neurosis, symptoms of neurotic maladjustment, the psychological aspects of physical disease, and the fundamentals of psychotherapy.

* * *

It was announced early in September that seven Minneapolis physicians had begun practice in the city.

Dr. Martin A. Nordland, after completing a fellowship in surgery at the Mayo Foundation, became associated with his father, Dr. Martin Nordland, with offices at 1737 Medical Arts Building. Dr. Robert F. Deranleau became associated with Dr. Paul N. Larson and Dr. William B. Stromme in the practice of obstetrics and gynecology at 731 Medical Arts Building. Dr. Norman Schneidman, after completing graduate work at the University of Minnesota and the Veterans Hospital, began practice in internal medicine at 701 Physicians and Surgeons Building.

Four other physicians who opened new offices were Dr. Robert W. Cranston, 1009 Nicollet Avenue; Dr. David Gaviser, 350 Medical Arts Building; Dr. John W. Johnson, 751 Medical Arts Building, and Dr. Fabian J. McCaffrey, 100 E. Franklin Avenue.



MINNESOTA DEPARTMENT OF HEALTH

Dr. Frederick W. Behmler, Morris, Stevens County health officer and member of the State Board of Health, was elected first vice president of the Minnesota Public Health Conference at its second annual meeting, held in Saint Paul, October 8. Dr. C. G. Sheppard, Hutchinson, was re-elected as treasurer for a second year. Dr. Hermina Hartig, chief school physician, Minneapolis Public Schools, was named as a member of the executive committee.

Honorary membership in the conference was bestowed upon Dr. Charles Scofield of Benson, in recognition of his long service as a general practitioner of medicine in Minnesota. Dr. Scofield has practiced in the state for sixty-four years and is now over ninety years of age.

Dr. J. Lawrence McLeod, Grand Rapids, Minnesota, retiring president, presided at the business session of the Conference and also at the evening session, when he gave the presidential address. Greetings from the Minnesota State Medical Association were presented by Dr. E. M. Hammes of Saint Paul, president-elect of the Association. Dr. D. A. Dukelow of Minneapolis, director, Health Division, Community Chest and Council of Hennepin County, presided at a panel discussion on "Full-time Local Health Departments in Minnesota." Other Minnesota physicians participating in the Conference were Drs. Ruth E. Boynton, A. J. Chesley, George Snyder, and Mario Fischer.

* * *

Many health officers and other physicians in all sections of Minnesota have contributed to the success of the five regional Health Days held this fall, the Minnesota Department of Health reports. Beginning early in September, Health Days have been held in Willmar, Fergus Falls, Crookston, Mankato, and Duluth, under the joint auspices of the medical societies, the women's auxiliaries, and the district offices of the Health Department.

Dr. B. J. Branton, Willmar, was general chairman of West Central Minnesota Health Day, held in Willmar, September 9. Dr. W. L. Burnap, Fergus Falls, Minnesota State Medical Association councilor for the 8th

district, was chairman of Park Region Health Day, held in Fergus Falls, September 29. Red River Valley Health Day, which took place in Crookston, October 7, was presided over by Dr. R. O. Sather, who is secretary of the Red River Valley Medical Association. Visitors were officially welcomed to Red River Valley Health Day by Dr. M. J. Bechtel, Warren, president of the medical society in that district.

In Mankato, where South Central Minnesota Health Day was held on October 13, Dr. A. G. Liedloff presided, and Dr. A. E. Sohmer gave an address of welcome. Dr. Liedloff is director of District Unit No. 2, Minnesota Department of Health. Dr. Sohmer is councilor for the 4th district, Minnesota State Medical Association. Dr. P. S. Rudie of Duluth, president of the St. Louis County Medical Society, presided at the Northwestern Minnesota Community Health Day, held in Duluth, October 15.

Other physicians who gave talks or participated in panel discussions at the various Health Days included the following:

West Central: Dr. F. W. Behmler, Morris, Stevens County health officer and member of the State Board of Health; Dr. W. W. Yeager, Marshall, Lyon County health officer; Dr. B. O. Mork, Jr., Worthington, director, district Health Unit No. 5; Dr. Kathleen Jordan, Granite Falls; Dr. Stanley Lindley, superintendent, Willmar State Hospital; Dr. Lloyd Gilman, Willmar, president, Kandiyohi-Swift-Meeker County Medical Society; Dr. A. E. Cardle, Minneapolis, president, Minnesota State Medical Association.

Park Region: Dr. Edward Dyer Anderson, Minneapolis; Dr. Ruth Hill, Moorhead; Dr. H. B. Thompson, Fergus Falls; Dr. Lillian Parsons, Elbow Lake; Dr. James Oliver, Moorhead, president, Clay-Becker Medical Society; Dr. C. O. Estrem, Fergus Falls; Dr. I. E. Bigler, Perham.

Red River Valley: Dr. O. D. Mellby, health officer, Thief River Falls; Dr. M. O. Oppegaard, mayor of Crookston.

South Central: Dr. B. P. Grimes, superintendent, St. Peter State Hospital; Dr. C. G. Sheppard, Hutchinson, McLeod County health officer; Dr. A. D. Mattson, St. James; Dr. Paul C. Leck, Austin, chairman, Rural Health Committee, Minnesota State Medical Association; Dr. F. F. Callahan, Saint Paul, chief of Medical Services unit, Division of Social Welfare; Dr. A. F. Dysterheft, Gaylord, Sibley County health officer; Dr. Paul Dwan, Minneapolis, president, Minnesota Heart Association; Dr. E. E. Novak, New Prague, Le Sueur County medical advisory committee and member of the Board of Regents, University of Minnesota.

Northeast: Dr. L. R. Gowan, Duluth; Dr. R. H. Pumala, Cloquet; Dr. J. D. Van Valkenberg, Floodwood; Dr. F. R. Kotchevar, Eveleth; Dr. John K. Butler, Carlton; Dr. Clarence Jacobson, Chisholm; Dr. E. L. Tuohy, Duluth; Dr. G. A. Hedberg, superintendent of Nopeming sanatorium; Dr. W. S. Neff, Virginia.

Also contributing to one or more Health Day programs were Dr. A. J. Chesley, executive officer, Minnesota State Board of Health; Dr. Gaylord W. Anderson, director of the School of Public Health, University of Minnesota; Dr. Mario Fischer, director of the Duluth Health Department and of Health District No. 4; Doctors Robert N. Barr, Helen Knudsen, A. B. Rosenfield, and Dean S. Fleming, of the State Department of Health staff; and Dr. Donald A. Dukelow, director of medical services, Minneapolis Council of Social Agencies.

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Blue Shield cases paid, Sept. 1-Sept. 30, 1948..... 433
Total for 1948..... 1,847
Paid on Blue Shield cases, Sept. 1-Sept. 30, 1948....$16,391.14
Total for 1948.....$68,968.61

During the last few months, the growth of Blue Shield in Minnesota has been truly great. Along with the increased number of Minnesota citizens protected by Blue Shield there has been an increase in the number of services for which allowances have been made as well as the amount allowed. As a result of these increases the Blue Shield has had many compliments. These "sunshine letters" have been written on expensive bond letterheads, on inexpensive ten-cent store tablets, and one very flowery and colorful thank-you card has been received. Irrespective of what the writing material consists of, the one theme goes like this:

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Letters of this sort are deeply appreciated, and it is felt that these "sunshine" letters should be passed on to the persons responsible, namely—the physicians of Minnesota who are supporting the Blue Shield. The Blue Shield office may be set up to operate with the utmost efficiency, but it cannot do so without the aid of the physicians, and the office is getting this aid.

The Blue Shield subscriber appreciates the physicians' showing the Blue Shield allowance on the statement, billing the limited subscriber for the balance due, or in the case of the unlimited subscriber, sending a statement indicating that the Blue Shield allowance is payment in full. They appreciate the fact that their own family doctor or the doctor to whom they are referred by the family doctor is a Blue Shield participating doctor of medicine, for they feel that if the doctor whom they respect and admire is back of a plan to which they have subscribed, it is worth while. Thus, actually "sunshine" letters received in the Blue Shield office are not thanking the office personnel, but are expressing their thanks to the people behind the Blue Shield—the doctors of Minnesota.

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BOOK REVIEWS

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YOUR BABY. Gladys Denny Shultz, contributing editor, Ladies' Home Journal, and Lee Forrest Hill, M.D., former president, American Academy of Pediatrics. 278 pages. Illus. Price $3.50, cloth. New York: Doubleday & Co., 1948.

OCCUPATIONAL THERAPY SOURCE BOOK. Edited by Sidney Licht, M.D. 90 pages. Price $1.00, cloth. Baltimore: Williams & Wilkins Co., 1948.

ESSAYS IN BIOLOGY. Presented to Arthur Neville Burkitt. A collection of essays written by some of his pupils to celebrate his completion of twenty-one years as Head of the Department of Anatomy, University of Sydney. 163 pages. Illus. Paper cover. Australia: Australasian Medical Publishing Co., Ltd., Glebe, New South Wales, 1948.

HUMAN BIOCHEMISTRY. Second edition. Israel S. Kleiner, Ph.D. Professor of Biochemistry and Director of Department of Physiology and Biochemistry New York Medical College, Flower and Fifth Avenue Hospitals; formerly Associate, the Rockefeller Institute for Medical Research, New York. 649 pages. Illus. Price $7.00, cloth. St. Louis: C. V. Mosby Co., 1948.

TECHNIQUE OF TREATMENT FOR THE CEREBRAL PALSY CHILD. Paula F. Egel, Cerberal Palsy Director, Children's Hospital, Buffalo, N. Y. 203 pages. Illus. Price $3.50, cloth. St. Louis: C. V. Mosby Co., 1948.

PHYSICIAN'S HANDBOOK. Fifth Edition. John Warkentin, Ph.D., M.D., and Jack D. Lange, M.S., M.D. 293 pages. Illus. Price $2.00, flexible binding. Palo Alto, California: University Medical Publishers, 1948.

SYMPOSIA ON NUTRITION. Volume 1, Nutritional Anemia. Edited by Arthur Lejwa. 194 pages. Illus. No charge. Cincinnati: Robert Gould Research Foundation, Inc., 1948.

FUNDAMENTALS OF CLINICAL NEUROLOGY. H. Houston Merritt, M.D., Professor of Clinical Neurology, College of Physicians and Surgeons, Columbia University; Chief of Division of Neuropsychiatry, The Montefiore Hospital; Fred A. Mettler, M.D., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University; and Tracy Jackson Putnam, M.D., Professor of Neurology and Neurological Surgery, College of Physicians and Surgeons, Columbia University. 289 pages. Illustrated. Philadelphia: The Blakiston Company, 1947. Price, $6.00.

This concise and authoritative résumé of fracture treatment will be a welcome handy reference for students and general practitioners. The material is well organized for handy reference.

The illustrations are adequate and clear.

—S. W. Shimonek, M.D.

HANDBOOK ON FRACTURES. Duncan Eve, Jr., M.D., F.A.C.S., Surgeon-in-Chief, Nashville, Chattanooga and St. Louis Railroad; District Surgeon, Louisville and Nashville Railroad; Associate Professor of Surgery, Vanderbilt University School of Medicine; Member of the Southern Surgical Society; Member of The American Association for the Surgery of Trauma; Chairman of the Committee on Fractures of the Medical and Surgical Section of the American Railroad Association; Member of the Committee on Fractures of the American College of Surgeons; Attending Surgeon, St. Thomas Hospital, Nashville, Tennessee, in collaboration with Trimble Sharber, A.B., M.D., Attending Surgeon, St. Thomas Hospital, Nashville, Tennessee. 263 pages. Illustrated. St. Louis: C. V. Mosby Co., 1947. Price: $5.00.

This is an interesting, well written book of less than 300 pages that combines a brief review of neuro-anatomy and physiology with the clinical aspects of neurology. The first portion dealing with examination of the nervous system covers particularly well the cranial nerves. One might wish for more attention to the testing of peripheral nerves, and especially the inclusion of some diagrams of nerve injury.

The remainder of the book deals with anatomic diagnosis. It does this by considering the nervous system segmentally: peripheral nerves, spinal cord, brain stem, et cetera. In each subdivision after covering the anatomy, blood supply, and physiology, there is a brief consideration of diseases and clinical syndromes. In a book this brief there is little space given to details of therapy, but the chief therapeutic agents are mentioned. A valuable chapter is the one on cerebro-spinal fluid giving an extensive listing of cerebro-spinal fluid changes in various diseases.

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ENCYCLOPEDIA OF MEDICAL SOURCES. Emerson Crosby Kelly, M.D., F.A.C.S., Associate Professor of Surgery, Albany Medical College; Attending Surgeon, Albany Hospital; Editor, Medical Classics. 476 pages. Baltimore; Williams & Wilkins Co., 1948. Price $7.50.

All persons doing reference work at some time or another are led astray and must retrace their steps because of incomplete or inaccurate citations to original work. Medical eponyms slow down, and frequently stump, the searcher.

Dr. Kelly, having had these experiences as an author and editor, began to keep a record of references to medical eponyms and to original and classic reports. After verifying each item and accurately recording these references, he has published them so that others may benefit from his findings.

The contents of the book are arranged alphabetically by author, with each identified as to nationality, specialty and dates. Under each author's name is a concise phrase describing his noteworthy contribution, or contributions, to medical literature with the exact title and reference for each. Useful cross references are scattered throughout and there is a subject index in the back of the book.

Dr. Kelly made no attempt to assign priority in descriptions. His search was for the correct titles and exact references to what, in his opinion, are the earliest or the most outstanding contributions to a subject.

While, no doubt, many a reference will have been missed in compiling this book, the author has included over 5,000 names and 15,000 references.

This is a useful reference tool in a medical library where time-saving devices are appreciated and where accurate, verified references are essential.

M. M. P.

DUODENAL ULCER: A SOCIOPSYCHOLOGICAL STUDY OF NAVAL ENLISTED PERSONNEL AND CIVILIANS, Jurgen Ruesch, M.D., and others. University of California Press. Price, $4.00.

The book reports the results of an investigation of the social and psychological factors in duodenal ulcer patients. Special emphasis is placed on situational difficulties and their relation to the individual's character structure.

Dr. Ruesch is associate professor of psychiatry in the University of California Medical School and research psychiatrist at the Langley Porter Clinic, San Francisco. The book was written in collaboration with Robert E. Harris, Ph.D., Carole Christiansen, M.A., Martin B. Loeb, B.A., Sally Dewees, M.S., and Annemarie Jacobson, M.D.

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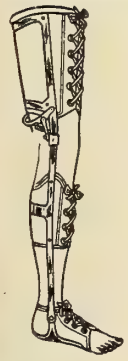
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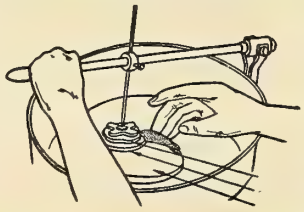
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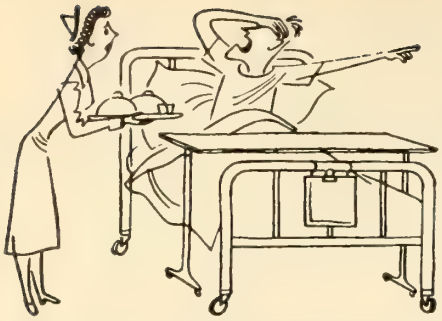
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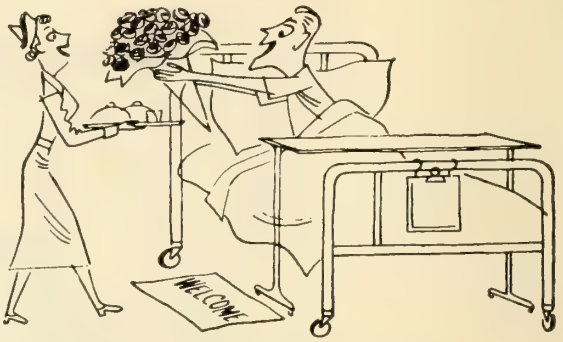
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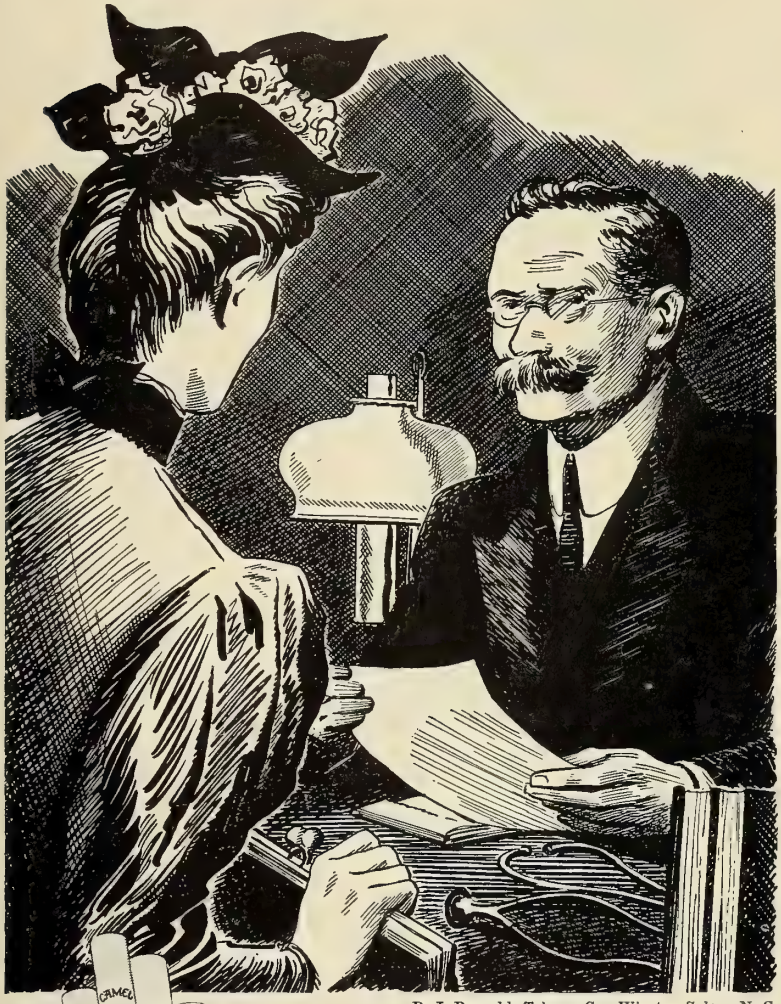
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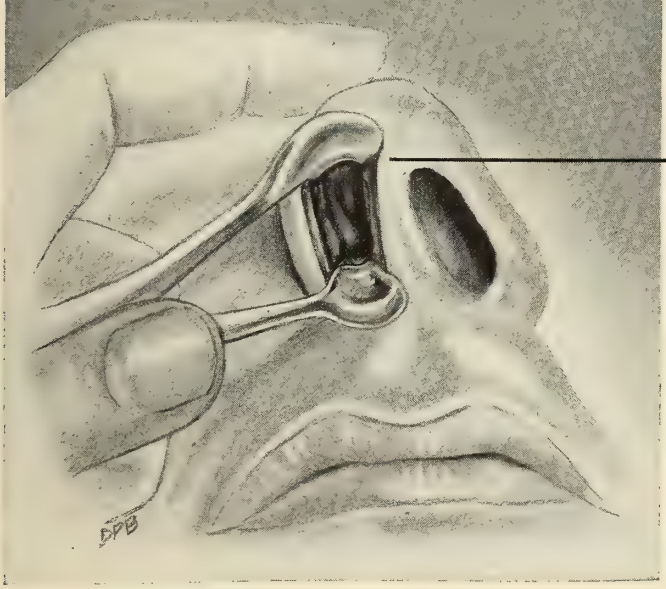
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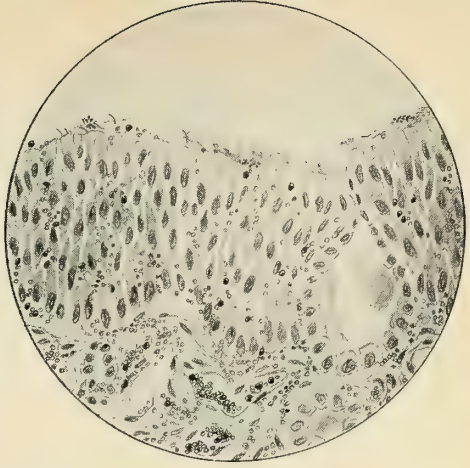
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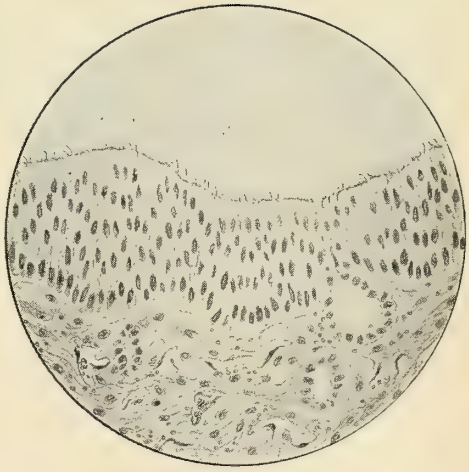
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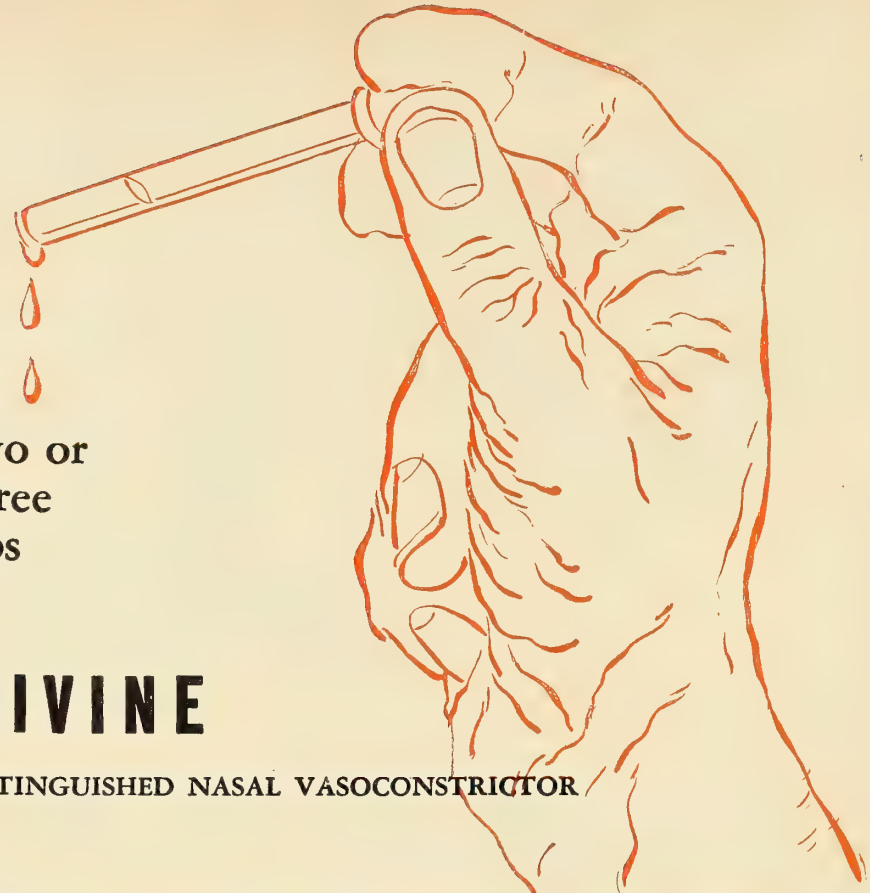
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1. Lennox, W. C. (1947), Tridione in the Treatment of Epilepsy, J. Amer. Med. Assn., 134:138, May 10. **2.** Merritt, H. H. (1947), Recent Advances in the Treatment of Epilepsy, with Particular Emphasis on the Use of Tridione, Arch. Neurol. & Psychiat., 57:130, Jan. **3.** Gibbs, F. A. (1947), New Drugs of Value in the Treatment of Epilepsy, Annals Int. Med., 27:548, Oct. **4.** Fetterman, J. L., and Weil, A. A. (1947), Practical Aspects of Epilepsy (with special consideration of epilepsy in children), Med. Clin. N. America, 31:1273, Sept. **5.** Liebert, E. (1947), Treatment of Neurological Disorders with Tridione, Ill. Med. J., 91:311, June.

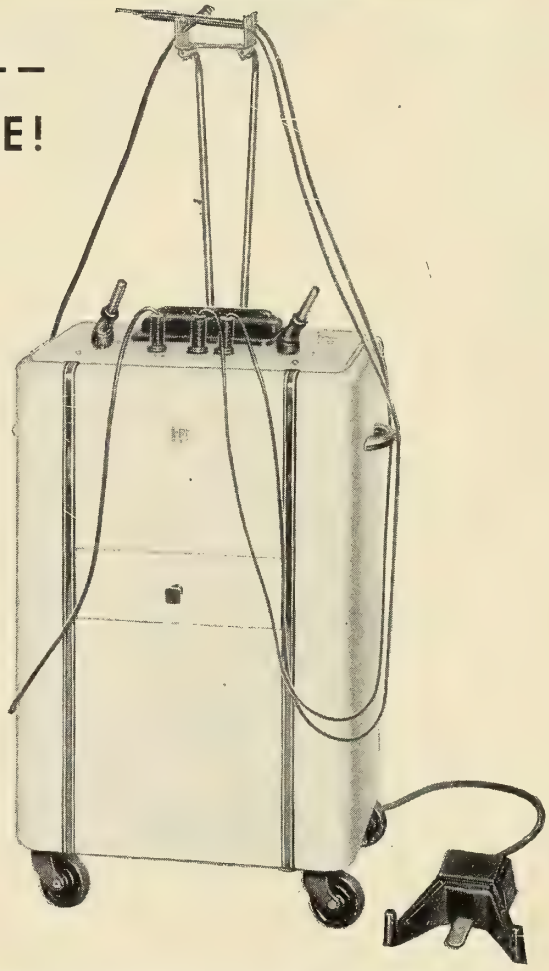
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1. New York State J. Med. 47:1003

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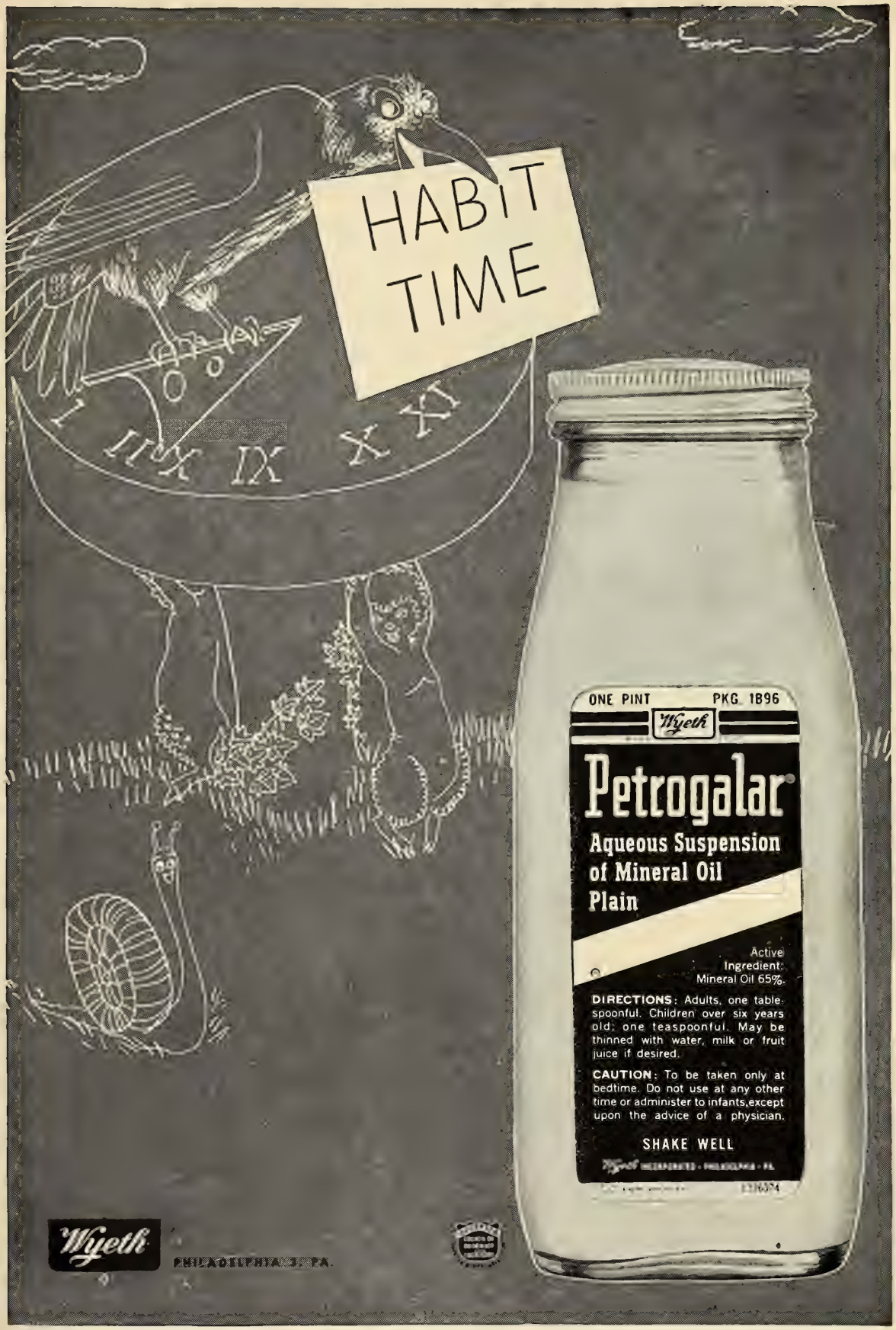
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*Philip Lewin, M. D., F.A.C.S.
Backache and Sciatic Neuritis,
Chapter XXXIX, Page 580
Published 1943 by Lea & Febiger, Philadelphia*

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 31 December, 1948 No. 12

Symposium on Antibiotics

Minnesota State Medical Association

Tuesday, June 8, 1948

INTRODUCTION TO SYMPOSIUM

WESLEY W. SPINK, M.D.
Minneapolis, Minnesota

FROM time to time at the annual meetings of the Minnesota State Medical Association, the status of specific therapy in infectious diseases has been reviewed. For this and other reasons, it is appropriate that the present position of the antibiotics in clinical medicine should be reviewed. We are indeed fortunate in the three men who have agreed to participate in this symposium. The first speaker, Dr. Sam Boyer, Jr., of Duluth, is well qualified to discuss the "Present Trends in Penicillin Therapy." The second speaker, Dr. Karl H. Pfuetze, has co-operated with the group from the Mayo Clinic in pioneer studies on the effect of streptomycin on the clinical course of tuberculosis. His subject is "Streptomycin in Tuberculosis." Dr. Wallace Herrell, the third speaker, has been identified for many years with the progress of antibiotic therapy in infectious diseases, and is the author of a monograph on penicillin. His subject is "Streptomycin and Newer Antibiotics in the Treatment of Infections Other Than Tuberculosis."

PRESENT TRENDS IN PENICILLIN THERAPY

SAM BOYER, JR., M.D.
Duluth, Minnesota

PRESENT trends in penicillin therapy may be roughly divided into four groups: (1) the promiscuous use of penicillin; (2) inadequate bacteriological study prior to the administration of penicillin; (3) penicillin reactions; and (4) methods and preparations to give prolonged activity of penicillin.

Penicillin is today one of the most widely used drugs. Questioning at the pharmacies of hospitals indicates that it is easily one of the five most commonly prescribed drugs if not the most. The relative innocuousness of the preparation, its definite value in many conditions, and confidence in its effect, on the part of profession and laity alike, have led to this frequent use. Actually, in many cases it is prescribed as freely as our most common analgesics or antipyretics. In a home practice one finds it is given at the first sign of infection and often before a diagnosis may be made. One of my older colleagues, an epidemiologist, recently remarked to me: "Years ago we used to say a patient had a touch of pneumonia,

Read as part of a Symposium on Antibiotics before the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, June 8, 1948.

give them drug X only to have a case of smallpox develop. Now we say they have a sinus infection, give them penicillin and a few days later have a case of measles."

TABLE I.

Patients Receiving Penicillin	143
Crystalline Penicillin	41
Procaine Penicillin	88
Combined Crystalline and Procaine	14

A review of the patients receiving penicillin covering approximately a three-week period at St. Luke's hospital in Duluth show that in this hospital with an average daily census of 295 patients, 143 received penicillin for one reason or another. It is of interest that about twice as many received procaine penicillin in oil as received crystalline penicillin (Table I). The patients could be divided into the following groups (Table II) with the corresponding number receiving the drug: medical 26, infectious diseases 10, dermatology 4, tuberculosis 2, surgery 24, genitourinary 7, orthopedic 12, gynecologic 12, eye, ear, nose and throat 6, obstetric 26, and unclassified 14. It is of interest that among these 143 patients the diagnoses ran almost the entire gamut of diseases prevalent in this part of the country. The great majority of obstetrical and surgical patients received penicillin prophylactically. The same can be said of the orthopedic and genitourinary cases. In obstetrical and gynecological surgery it was apparently used at times for urinary infections and in surgical cases for fever appearing postoperatively. I do not believe we are in a position to question its use prophylactically, but one might indeed raise the question of whether its use as such is making us more dependent on a valuable drug and less so on our technique. In medicine there again appears to have been rather haphazard use. Here one found it used in two patients with tuberculosis, three with rheumatic fever, in patients with nephrosis, asthmatic bronchitis, and upper respiratory infections. Actually this antibiotic is frequently used when some of our common antipyretics could be just as judiciously and less expensively used and is more often used without a definite diagnosis than with one.

The promiscuous use of penicillin is definitely bound to inadequate bacteriological study. Again in the 143 patients receiving penicillin in this approximate three-week period seven had blood cultures, two had spinal fluid cultures, eight had nose and throat cultures and two had urinary cultures (Table III). It is my belief that where bacteriological studies may be done prior to the administration of such a valuable drug, this

TABLE II.

Medicine	26	
Infectious Diseases	10	
Dermatology	4	
Tuberculosis	2	
Total		42
Surgery	24	
Genitourinary	7	
Gynecology	12	
Orthopedic	12	
Total		55
Obstetrics	26	
Ear, Nose and Throat	6	
Unclassified	14	
Total		143

TABLE III. BACTERIOLOGICAL STUDY

Blood Culture	7
Spinal Fluid Culture	2
Nose and Throat Culture	8
Urine Culture	2

should first be done. It is unusual that a delay of a day or two may do harm. It is, of course, true that in fulminating diseases, like meningitis, immediate use of chemotherapy or antibiotic therapy is of prime importance. However even in these instances blood culture and spinal fluid cultures can easily be first obtained. The establishment of a definite bacteriological diagnosis will give some idea as to whether the drug is indicated, the size of the dosage and how long it should be continued. In country practice, of course, it is recognized that bacteriological study is often a near impossibility. However, some of my friends in active country practice have made full use of the facilities of the State Board of Health in order to obtain such information. I presume one might formulate the dictum: use penicillin wisely and judiciously, and if humanly possible try to get adequate bacteriological study first.

Directly related again to the frequent and promiscuous use of the drug is the popular conception that this antibiotic agent is entirely harmless. It is perfectly true that toxicity and the incidence of reactions is low. However, we have lost sight of two facts: (1) serious and sometimes alarming reactions may occur; and (2) by indiscriminate and frequent use of the antibiotic, the value of the drug in the future if needed for some virulent and life-threatening infection may have become lessened or prohibited. The literature is rife with reports on penicillin reactions. Lyons[17] indicated that chills with or without fever oc-

curred with intravenous injections and, of course, noted the occurrences of thrombophlebitis after intravenous administration. In addition he noted burning pain at the site of injection, headache, faintness, tingling in the testes, muscle cramps and urticaria. The latter occurred in 5.7 per cent of the cases. It was thought that these reactions were due to impurities in the preparations. Eilert[7] classified reactions as (a) toxic dermatitis occurring in patients who had never received penicillin before, and appearing about the tenth day; (b) exfoliative dermatitis and (c) a serum sickness type of reaction manifested by fever, urticaria and polyarthritis or arthralgia. She indicated that the latter type of reaction might occur as late as nine days after penicillin had been discontinued. Peck[20] classified reactions into four groups: (a) those similar to serum sickness and closely allied to which are toxic erythema and severe local reactions following the use of oily preparations; (b) allergic contact dermatitis following local applications; (c) erythematovesicular eruptions usually occurring at the site of previous fungus infections and (d) febrile reactions following the use of aerosols or bronchial instillations.

Strazza,[21] Eisenstadt,[8] Keefer,[15] Hailey,[12] and Hinman[14] all report instances simulating serum sickness. The latter also notes ecchymoses, gastrointestinal symptoms and central nervous system complaints. Binckley and Brockmole[2] report one case of contact sensitivity, and Barker[1] adds a case of dermatitis venenata. Farrington[10] reports cases with definite cutaneous sensitivity and indicates a definite allergic reaction. Criep[5] has, in addition to reporting a case with an urticarial reaction, definitely shown that skin tests, passive transfer tests and precipitin tests may all be positive. Graves[11] et al report immediate reactions to penicillin with the development of a vesicular rash in people who had previous fungus infections and raise the question of (a) fungus antigen relationship; (b) release of toxins by bacterial action; or (c) sensitivity. Bullous dermatitis[19] and also stomatitis[10,16] have been reported. The development of the latter after oral ingestion of penicillin is a very important detail. The sore mouth is very distressing to the patient and the danger is presented of increasing the dose of penicillin and aggravating the condition rather than correcting the lesion by discontinuing the medication.

A discussion of the reactions to penicillin cannot be concluded without reference to the dangers and complications of intrathecal administration which include[22] radiculitis and myelopathy associated with chronic meningeal thickening. Erickson et al[9] cite the following factors in the production of toxic manifestations following intrathecal injection: (a) concentration of penicillin solution; (b) slow diffusion of spinal fluid; (c) size of individual dose; (d) frequency of injection; and (e) duration of intraspinal therapy. Finally, as Morginson[18] has pointed out, there are in addition to the direct toxic reactions and antigen reactions also the therapeutic shock or Jarisch-Herxheimer reaction and the indirect reaction on pathological processes. An attempt has been made to combine the classifications of Eilert, Peck and Morginson in Table IV. It is thus seen that the frequent and injudicious use of penicillin may result in reactions which are deleterious to the patient and which may possibly sensitize them so as to make the future use of penicillin almost an impossibility.

TABLE IV. CLASSIFICATION OF REACTION

1. Direct Toxic Reaction
   - A. Febrile
2. Antigen Reaction
   - A. Similar to serum sickness
   - B. Contact dermatitis
   - C. Erythematovesicular eruptions
   - D. Exfoliative dermatitis
3. Therapeutic Shock
4. Indirect Action on Pathologic Process

It is a far cry from the first dose of penicillin any of us gave or ordered given to the present-day widespread administration. Attempts have been constantly made to refine the drug and to prolong its action. Crossone et al[6] cite the following methods to obtain a concentration above .030 units per c.c., which is generally considered an adequate level: (a) increasing the dosage and administering the drug more frequently; (b) varying the route of administration (constant intravenous or intramuscular drip); (c) slowing absorption by cooling the site of administration or by the administration of penicillin in oil or beeswax; (d) suppressing the excretion in renal tubules by use of various preparations.

Penicillin in beeswax and oil was the first preparation which gave an adequate prolonged blood level. However, pain on injection, the persistence of a subcutaneous or intramuscular mass, allergic reactions and the development of sterile abscesses have complicated its use. Procaine penicillin is the latest preparation, the administration

of which give adequate levels over a twelve- to twenty-four-hour period. The use of this salt in sesame oil has been shown by Herrel[13] and Boger et al[4] to yield blood levels considered adequate in the treatment of pneumonia for twenty-four hours. The advantages in this preparation lie in fewer injections, reduction in pain, reduced man-hours in large-scale administration of the drug in hospitals and ready availability of penicillin for home use. Still faced as a disadvantage, is the intramuscular injection of an oil. Recently advanced is procaine penicillin in aqueous solution. I understand that blood levels similar to those obtained with the oil preparation are obtained. It is entirely possible, although too early to say, that study on a large scale will prove the efficacy of this preparation and thus answer the problem of injecting an oil.

Various preparations have at times been used experimentally to inhibit the excretion of penicillin. Caronamide (carboxyphenylmethanesulfanilide) is the most recent and apparently most successful of these preparations. This drug inhibits the enzyme transport system of the renal tubular epithelium by which penicillin is excreted. Crossone[6] found that when 1.5 to 2 grams of caronamide were administered every four hours the blood penicillin level was elevated two to seven times. Boger[3] later demonstrated that a caronamide plasma concentration level of approximately 15 mg. per cent was necessary to inhibit the renal excretion of penicillin sufficiently to double the blood level of the latter. A dosage of 1.5 gms. every three hours may give this level in some persons, but on the average in the person with normally functioning kidneys a dosage of 3 grams every three hours or 4 grams every four hours is necessary to maintain this desired level. It is thought that the maximum efficiency of this drug is reached between the levels of 20 mgs. to 40 mgs. per cent. This preparation has not been used widely and has only recently, to my knowledge, been made available for general use in this part of the country. Its practical value yet remains to be seen. Its disadvantage lies primarily in the large number of tablets necessary.

In conclusion, penicillin is used promiscuously, widely, and frequently without indication. Bacteriological study and diagnosis are lacking more often than not. Reactions to penicillin, usually allergic, may occur. The development of procaine penicillin during recent months has been a far-reaching step in prolonging the activity of the drug. The inhibition of renal excretion may be of value in the prolongation of penicillin activity.

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MENTAL AND SOCIAL HEALTH

Malaria, smallpox, tuberculosis, venereal disease, diphtheria, many others, could all be got rid of—from the whole world, without any further knowledge or research, if we had mental health and social health in the people of the world, if enough people in enough places could think in factual terms and had good mental health. Nothing keeps the diseases alive except ignorance and shortsighted self-interest. Long-sightedness would get rid of those things quickly.—Brock Chisholm, M.D., *Mental Hygiene*, July, 1948.

STREPTOMYCIN IN TUBERCULOSIS

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IN PREVIOUS years, the evaluation of chemotherapeutic agents in tuberculosis was most difficult because of the unpredictable natural evolution of this disease. In 1940, Feldman, Hinshaw and Moses found that tuberculous processes in guinea pigs could be suppressed and apparently reversed by treatment with promin. Similar encouraging results were obtained subsequently by these and other investigators by the use of other sulfone compounds in experimental tuberculosis. In later clinical investigations the therapeutic value of the sulfones was suggested but, for a number of reasons, could not be proved. However, since the discovery of streptomycin[9] and the demonstration of the efficacy of this antibiotic against tuberculous infections,[5] sheer weight of evidence has placed the antibacterial treatment of tuberculosis on a firm basis.

Clinical Use

Tuberculous Meningitis.—The specific effect of streptomycin on tuberculous infections was immediately apparent in the ability of the drug to cause remission in tuberculous meningitis and in generalized miliary tuberculosis, conditions almost invariably fatal otherwise. In tuberculous meningitis life is frequently prolonged by the use of streptomycin, remission often is remarkable in degree and in a minority of cases the disease process may prove to be permanently arrested.

Since results are best when treatment is begun early in the course of the disease, the administration of streptomycin should be instituted on presumptive evidence of tuberculous meningitis, without waiting either for bacteriologic confirmation or for development of the classic syndrome. However, treatment should not be withheld if the patient is not seen until the disease is fully developed. One patient at the Mayo Clinic was stuporous and disoriented when treatment with streptomycin was begun, and little improvement was noted until after two months of intensive treatment; yet this patient eventually attained complete remission and remained well two years later.

In a large proportion of the patients whose life is prolonged by chemotherapy, arterial changes develop in the central nervous system, or spinal block or hydrocephalus may occur, owing to the organization of fibrinous exudate. In many cases death has been attributed to these causes. Methods being investigated for the prevention of such disasters include drainage by surgical procedures[10] and the intrathecal injection of heparin.[6]

Disseminated Tuberculosis.—The end results of streptomycin therapy in disseminated tuberculosis are suggested by a review of the first 100 patients treated by the Veterans Administration.[2] One year after the completion of treatment, twenty-four patients were alive, and in fifteen of these patients there was no evidence of active disease. In generalized miliary tuberculosis, the results of streptomycin therapy are almost uniformly good when the drug is administered early in the course of the disease and when meningitis does not develop. The desirability of early diagnosis, when the patient presents a minimum of symptoms, is obvious.

Other Extrapulmonary Tuberculosis.—In most other forms of extrapulmonary tuberculosis the prognosis has been altered or reversed since the advent of chemotherapy. It is now generally agreed that streptomycin is the treatment of choice in tuberculosis of the oropharynx, larynx and tracheobronchial tree; in all cutaneous sinuses and fistulas of tuberculous origin; in tuberculous enteritis and peritonitis, and in tuberculous otitis media. In all of these conditions the proportion of patients who are cured or show marked improvement tends to be in excess of 80 per cent and the proportion of relapses is usually less than 10 per cent.

In a number of other tuberculous conditions streptomycin has not proved to be uniformly effective but a trial of chemotherapy may be indi-

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cated if no other treatment is available or if the condition has proved refractory to other treatment. Acute tuberculous pericarditis, tuberculous empyema, lupus vulgaris, tuberculous lymphadenitis and, probably, ocular tuberculosis belong in this category.

In tuberculosis of bones and joints, streptomycin has been beneficial in more than half of the cases in which it was used.[1] Probably because the process of healing is slow in this condition, maximal improvement may not be manifest until some time after the completion of chemotherapy. Subsidence of local signs and symptoms may be complete and eventually there may be roentgenographic evidence of healing. In chronic disease, streptomycin is useful in conjunction with surgical treatment, especially when draining sinuses are present.

In genitourinary tuberculosis, streptomycin has brought about some degree of improvement, at least temporarily, in nearly all cases. Alleviation of symptoms is often marked and in approximately three fourths of all cases the urine becomes free of tubercle bacilli during chemotherapy. The bacteriologic conversion is too frequently not permanent and recurrent disease due to streptomycin-resistant bacilli may develop, especially in advanced destructive types of renal tuberculosis. Although there is seldom any change in renal abnormalities as shown by pyelography, lesions of the bladder tend to heal or to improve. Thus streptomycin has been a great boon to patients having bilateral renal tuberculosis, tuberculosis of a solitary kidney and other conditions not amenable to surgical treatment. Genital lesions, as a rule, are not healed by chemotherapy alone. However, in such lesions streptomycin is of value in bringing about the healing of sinuses and as an adjunct to surgical treatment.

Pulmonary Tuberculosis.—In pulmonary tuberculosis, the efficacy of streptomycin depends much more on the type of disease than on its extent. Exudative disease responds best to chemotherapy, proliferative lesions often show some degree of improvement but chronic fibrocaseous disease usually is not materially affected. Therefore, in any series of cases, the results of streptomycin therapy can be correlated closely with the predominant types of lesions. In order that streptomycin may be used to best advantage, careful selection of cases is necessary.

Indications for streptomycin therapy in pulmonary tuberculosis include all acute pneumonic processes, apparently exudative disease which has progressed or remained stationary after an adequate trial of other treatment, recently apparent pulmonary lesions due to hematogenic and bronchiogenic dissemination and tuberculous pleurisy with effusion which is accompanied by toxemia.

Streptomycin has increased the possibilities for collapse therapy and for other surgical treatment of pulmonary tuberculosis. When the disease is in an acute stage, pneumothorax can be initiated sooner and with greater safety when chemotherapy is administered than would be possible otherwise. When exudative lesions are brought under control by means of streptomycin therapy, thoracoplasty and pulmonary resection often become available to patients who were denied surgical treatment previously.

Especially in pulmonary tuberculosis, the permanence of improvement is not a valid test of the efficacy of a chemotherapeutic agent. Whether or not improvement is sustained depends on the patient's own defensive mechanism. If this is inadequate, there is danger of a relapse when chemotherapy is withdrawn or when it becomes ineffective because of the occurrence of bacterial resistance. It is reasonable to suppose that the patient who has demonstrated the need of antibacterial therapy in the first place is more prone to relapse than other patients of similar status regardless of the type of treatment employed. Therefore, it is the physician's responsibility to exercise judgment in the management of each patient, making secure the benefits of chemotherapy by the use of any other therapeutic resource which may be available.

Streptomycin is too valuable to be used wastefully. Until methods are discovered for the prevention of bacterial resistance, the suppressive effect of streptomycin may be available to a patient only once in the course of his tuberculous infection. Therefore, the drug should be reserved for the time when it is really needed. It is not indicated in minimal pulmonary tuberculosis and often should not be used in moderately advanced cases, unless the patient is acutely ill or fails to respond to an adequate trial of other treatment.

Surgical Uses.—Moreover, we do not believe that streptomycin should be used as prophylactic treatment without sufficient reason. Chemothera-

py certainly is not necessary in an uncomplicated thoracoplasty. However, streptomycin probably should be prescribed routinely in pulmonary resection and in other excisional procedures, when there is danger of extension of disease, of reactivation of foci of infection or of hematogenic dissemination. It is generally agreed that chemotherapy is valuable and justifiable in surgical treatment of the genitourinary system, in orthopedic surgery and in the surgical treatment of constrictive pericarditis. When streptomycin is used prophylactically in surgery, the period of preoperative treatment should not be longer than ten to fourteen days in order to insure persistence of the suppressive effect of the drug throughout the postoperative period.

Thus streptomycin is often of great value in conjunction with the surgical treatment of tuberculosis. It is true, likewise, that in some conditions surgical procedures improve the results of chemotherapy. For instance, it has been demonstrated that drainage and possibly débridement of tuberculous abscesses during treatment with streptomycin increases the probability of a successful result.

Bacterial Resistance

The phenomenon of bacterial resistance is one of the chief limiting factors in streptomycin therapy. When streptomycin-sensitive tubercle bacilli are supplanted by drug-resistant organisms, the patient becomes refractory to further chemotherapy. In nearly all instances, resistance of high degree has proved to be a persistent and, possibly, a permanent characteristic of bacterial strains. The virulence of resistant tubercle bacilli apparently is unchanged and especially stringent precautions should be taken to prevent the dissemination of such organisms. Because of the possibility of the production of drug-resistant strains, streptomycin should not be administered without sufficient reason to persons who are expected to remain infectious.

Before exposure to streptomycin, nearly all strains of Mycobacterium tuberculosis, of both human and bovine types, are predominantly sensitive to the drug.[13] After six weeks of treatment, predominantly resistant strains can be recovered from approximately a fourth of all patients who continue to discharge tubercle bacilli; after sixteen weeks of treatment, approximately three fourths of all strains are resistant. It appears, therefore, that it should be possible in many instances to avoid the occurrence of bacterial resistance by curtailment of the duration of treatment. Fortunately, in many tuberculous conditions, treatment for five or six weeks or for even briefer periods often is sufficient to accomplish the purpose of chemotherapy.

When it is possible to make frequent and rapid studies of sensitivity to streptomycin *in vitro,* duration of treatment may be determined on this basis. If cultures of Mycobacterium tuberculosis are made on a solid medium containing various concentrations of streptomycin, it is possible to estimate the relative numbers of sensitive and resistant organisms in any specimen.[7]

Apparently, the number of resistant organisms and the degree of their resistance increase during chemotherapy by a fairly gradual process. Therefore, it may be possible to halt treatment in time to avoid high degrees of resistance. When the growth of cultures recovered from a patient is approximately half as heavy on medium containing 10 micrograms of streptomycin per milliliter as on medium not containing streptomycin, continuation of chemotherapy probably is inadvisable in most cases.

In our experience, egg yolk agar containing 2 per cent glycerin is an easily prepared and otherwise satisfactory medium in which to incorporate streptomycin for the determination of drug sensitivity. The method can be used either for the primary isolation of a culture of Mycobacterium tuberculosis,[7] or for subcultures. Other solid mediums have also been found suitable as a basis for streptomycin-sensitivity studies. The solid medium of Dubos is being used in some laboratories.[8]

Methods being investigated for the prevention or delay of bacterial resistance include regimens of discontinuous treatment and the administration of streptomycin together with other drugs which also are antibacterial in respect to tuberculosis. Preliminary results indicate that some degree of success possibly is achieved by both methods, but the problem of bacterial resistance is by no means solved.

Administration, Dosage and Toxicity

Although streptomycin has been used clinically for more than three years, matters pertaining to dosage and administration are still undergoing critical analysis. It appears that in most types

of tuberculosis an adequate regimen would be one which produces a prolonged bacteriostatic effect but that in the more serious forms of the disease a regimen which is at least partly bactericidal would be highly desirable, if attainable. In tuberculous meningitis, the patient's natural powers of recovery appear to be so insignificant that permanent arrest of the disease process probably occurs only when the infection is eradicated or nearly eradicated.

In practice, results in tuberculous meningitis have been best when treatment with streptomycin was intensive. The consensus at present is that the daily dose of streptomycin should be approximately 0.02 gm. per pound of body weight and that treatment should be continued for at least three or four months. In the experience of most investigators, remission in tuberculous meningitis has been sustained only when intramuscular administration was supplemented by the intrathecal injection of streptomycin, 25 to 100 mg. being administered intrathecally every twenty-four to forty-eight hours during the first six or eight weeks of treatment.

In a report on 105 cases of tuberculous meningitis, the Streptomycin in Tuberculosis Trials Committee of the Medical Research Council of Great Britain[12] stated that a third of the patients receiving streptomycin by both intramuscular and intrathecal routes were doing well after 120 days of observation, whereas only a ninth of the patients receiving the drug by intramuscular administration alone were doing well at the end of that period. In this study it was found that intrathecal injection produced very high concentrations of streptomycin in the cerebrospinal fluid. From one to three hours after the injection of 0.1 gm., the level was 750 to 2,000 micrograms per milliliter of fluid. In such concentrations, streptomycin surely is bactericidal for tubercle bacilli which were accessible to the drug.[4]

In generalized miliary tuberculosis without meningitis, it is probable that the dose of streptomycin should be relatively large and that treatment should be prolonged. It may be true, also, that high concentrations of streptomycin in the blood are necessary in renal tuberculosis, if bacteriologic conversion of the urine is to be permanent. However, in renal tuberculosis, dosage must be adjusted to renal function, because, when function is impaired, concentrations of streptomycin in the blood may be excessive.

In all other forms of tuberculosis which are amenable to chemotherapy, results are satisfactory when the dose of streptomycin is relatively small and when the period of treatment is relatively brief. The pathologic characteristics of most forms of tuberculosis are peculiar in that eradication of the infection probably is seldom possible by any means. Fortunately, the host usually has considerable natural powers of defense, and, when streptomycin is needed to bolster these powers, it appears that clinical results are equally good whether the drug is chiefly bacteriostatic in effect or whether an attempt is made to produce a bactericidal effect.

For two and a half years, at Mineral Springs Sanatorium, we have been using streptomycin in a dose of 1 gm. a day with results comparable to those achieved previously with larger doses. It appears now that further reduction of the dose is possible in the treatment of the more susceptible types of tuberculosis. After a study in which more than 3,000 patients were treated with streptomycin under various systems of dosage, the Streptomycin Committee of the Veterans Administration[11] concluded that there was no detectable loss of therapeutic efficacy as the daily dose was reduced from 2 gm. to 1 gm., and they added, tentatively, that no loss of efficacy appeared to follow a further reduction of the dose to 0.5 gm.

It has been found that the frequency of administration can vary greatly. Results appear to be as good when the drug is administered only once or twice a day as when the total daily dose is divided into a number of fractions administered at frequent intervals. However, as the minimal effective dose is approached, the rationale of infrequent administration becomes questionable.

As the dosage has been reduced, there has been proportionate decrease in the potential toxicity of streptomycin. When the daily dose is 1 gm. or less, toxic manifestations are low in incidence and in degree of severity. Vestibular disturbances occur in only a small proportion of patients receiving small doses of streptomycin; loss of labyrinthine function, when it occurs, tends to be partial and, in some instances apparently reversible.

When dosage is translated into terms of body weight, it should be possible to prescribe streptomycin with the dual assurance of achieving the desired therapeutic result and of avoiding all

toxic effects except those which are due to idiosyncrasy or to acquired sensitization to the drug.

Summary and Conclusions

Streptomycin probably will be the standard of efficacy for the estimation of other chemotherapeutic agents in tuberculosis. It may also be the basis for most new regimens of chemotherapy. The administration of streptomycin together with other compounds which are antibacterial in respect to tuberculosis may have the twofold advantage of an increase in therapeutic effect and of the prevention or delay of the occurrence of bacterial resistance. Until the all-important problem of resistance is solved, it is possible that the phenomenon may be avoided in many instances by arbitrarily limiting the period of treatment to six weeks or less, or by discontinuing treatment whenever studies of sensitivity show a relative increase of the number of resistant tubercle bacilli in cultures recovered from the patient.

The efficacy of streptomycin depends on the accessibility of tuberculous lesions to the drug and on the absence of irreversible anatomic changes. As a rule, these conditions obtain more often in recent lesions than in those of long standing. As chemotherapy becomes established, the ultimate results should improve, because an increasing number of patients will receive streptomycin in stages of disease which are optimal for treatment.

All types of tuberculosis treated with streptomycin are subject to relapse. In pulmonary tuberculosis, especially, streptomycin alone seldom provides definitive treatment. It never was predicted that chemotherapy would supplant rest, collapse therapy and excisional surgery. It has become evident that streptomycin and other therapeutic resources are mutually beneficial and the phthisiologist must now consider chemotherapy in all its aspects in the management of any patient.

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AMA PROCURES SEX FILM FOR SCHOOLS

The Committee on Medical Motion Pictures of the AMA has secured the movie, "Human Growth," 16 mm., color, sound, 750 feet (one reel), which is designed to teach the facts of life to children in the sixth through ninth grades of junior high school.

Several months ago *Life* magazine termed this movie, first shown in Oregon, as "epoch-making." It makes clear the growth of the human body, the development of the glands and the reproductive process. But more important, it stimulates classroom discussion.

The movie is only nineteen minutes long, but into it has gone nearly ten years of careful research, financed by the University of Oregon's E. C. Brown Trust Fund. Its author, Dr. Lester F. Beck, a professor of psychology at the university, had tested every step of the filming with parents and teachers.

The committee has procured another film entitled "Human Reproduction," black and white, sound, 825 feet (one reel), showing time twenty-three minutes, which illustrates the anatomy and physiology of the human reproductive system with explanation of ovulation and menstruation.

A third film entitled "A Life In Your Hands," black and white, sound, showing time nine minutes, depicts the new National Blood Program and portrays why this program is so urgent at this time.

Physicians called upon to address lay audiences such as service organizations, parent-teacher associations and other groups may find these films a useful adjunct in their lectures. The films are procurable on loan to physicians from the committee.—Secretary's Letter, A.M.A., Oct. 18, 1948.

STREPTOMYCIN AND NEWER ANTIBIOTICS IN THE TREATMENT OF INFECTIONS OTHER THAN TUBERCULOSIS

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Streptomycin

CLINICAL experience with the use of streptomycin in the treatment of infections due to organisms sensitive to its action now covers about four years. My discussion on streptomycin is limited to its use in the treatment of infections other than tuberculosis. In this same symposium Dr. Pfuetze has discussed this other aspect of streptomycin therapy.

Some reasonable conclusions concerning the effectiveness as well as the limitations of streptomycin can be made. At this point I should like to mention a matter which cannot be overemphasized, that is, the need for better bacteriologic facilities in all hospitals. If streptomycin or other antibiotics are to be applied intelligently in the treatment of infections and contagious disease, the physician must have the collaboration of his colleagues in the field of bacteriology and he also must familiarize himself with the organisms which are considered sensitive to streptomycin.

Streptomycin has proved exceedingly effective in the treatment of certain types of bacteriemia and infections of the urinary tract due to Gram-negative organisms which are sensitive to its action. The four streptomycin-sensitive organisms which are most commonly encountered in infections of the urinary tract and bacteriemia are Escherichia coli, Pseudomonas aeruginosa, Proteus vulgaris and Aerobacter aerogenes. The results are considerably better in the treatment of infections due to Proteus vulgaris and Aerobacter aerogenes than in the treatment of infections caused by Pseudomonas aeruginosa and Escherichia coli. Organisms belonging to the typhoid-dysentery group are considered fairly sensitive to streptomycin; however, streptomycin has not proved of great value in the treatment of typhoid and dysentery. One of the organisms most sensitive to the action of streptomycin is Klebsiella pneumoniae (Friedländer's bacillus). It is well established that good clinical results have been obtained from use of streptomycin in the treatment of pneumonia and also meningitis due to this organism. Likewise, streptomycin has been found of value in the treatment of ozena and rhinoscleroma, two conditions in which it is not difficult to obtain positive cultures for Klebsiella. Recurrences, however, not infrequently occur because this organism at times appears to possess the ability to become quickly resistant to streptomycin.

Among other organisms which are sensitive to streptomycin are Pasteurella tularensis and Pasteurella pestis, the causes of tularemia and plague. True enough, tularemia is not very common and plague is, of course, rare in this locality. Clinical experience has clearly demonstrated, however, that all forms of tularemia respond magnificently to treatment with adequate doses of streptomycin. By adequate doses for this particular infection I mean 1 to 2 gm. daily for five to seven days. It is unlikely that a causative organism which is resistant to streptomycin will be encountered in tularemia. The literature contains a number of reports suggesting that streptomycin is of great value in the treatment of plague.

It is fortunate that the organisms belonging to the genus Hemophilus are rather sensitive to the action of streptomycin. Hemophilus influenzae, the cause of influenzal meningitis and severe tracheitis, is very sensitive to streptomycin. In the treatment of influenzal meningitis of the severe type, streptomycin should be combined with sulfadiazine and, in some cases, combined also with serum therapy. I am aware that some physicians are reluctant to give streptomycin by the intrathecal route; however, my colleagues and I routinely give 100 mg. in 10 c.c. of physiologic saline solution by this route every other day for the first few days in the treatment of this infection. Hemophilus pertussis, the organism which causes whooping cough, is known to be sensitive to streptomycin; therefore, it is difficult for me to understand why there have been so few clinical reports dealing with the use of streptomycin in the treatment of whooping cough. As I have already said, experimentally it is very effective against this infection. Recently Coffey and Levy reported on the use of streptomycin in four cases of pertussis pneumonia, and Decanio reported on

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its use in two cases of severe whooping cough. These investigators were of the opinion that streptomycin was effective. I also have used streptomycin in two cases of whooping cough in which it definitely appeared to exert a beneficial effect on the course of the disease. It is my conviction that studies on the use of streptomycin in the treatment of whooping cough should be expanded.

Organisms of the genus Brucella, mainly Brucella abortus, Brucella melitensis and Brucella suis, are only moderately sensitive to streptomycin. The early clinical reports on the use of streptomycin in the treatment of brucellosis indicated that streptomycin had a suppressive effect on this infection, but when used alone for this infection streptomycin could not be considered curative. Pulaski and Amspacher deserve great credit for their observation that streptomycin and sulfadiazine combined seemed to have some additive effect in the treatment of brucellosis. The usual procedure is to give enough sulfadiazine to establish a concentration of 10 to 12 mg. per 100 c.c. of blood and at the same time to administer 2.4 gm. of streptomycin per day by the intramuscular route. This course of treatment is continued for twelve to fourteen days. This method is exceedingly effective in the treatment of the uncomplicated bacteriemic forms of the disease. It is of little or no value in the so-called chronic brucellosis without positive blood cultures. These observations made by Pulaski and Amspacher have been extended considerably by Eisele and McCullough and also by Spink and his colleagues. Results obtained by my colleagues and me are also in agreement with those reported by these investigators.

The use of streptomycin in the treatment of certain infections due to some Gram-positive cocci deserves our attention. On occasions streptomycin has proved itself life saving in the treatment of infections including bacteriemia due to some strains of Staphylococcus aureus and to some strains of streptococci which are, or have become, resistant to penicillin.

From what I have said streptomycin apparently has a wide range of clinical application. On the other hand, let me recapitulate for a moment. The conditions in which streptomycin is effective are infections of the urinary tract and bacteriemia due to sensitive Gram-negative and some Gram-positive microbes. Let me point out, however, that bacteriemia owing to Gram-negative organisms is encountered in relatively few instances in any active medical service. Friedländer's infections also respond satisfactorily to treatment with streptomycin but these infections are certainly not common. Influenzal meningitis and whooping cough are benefited by streptomycin but these infections also are not commonly encountered. Tularemia and plague can be treated satisfactorily and I also might add that cholera may respond satisfactorily to streptomycin therapy. Finally, there is the problem of brucellosis which is, of course, a major one, but streptomycin alone is not entirely effective in the treatment of this infection. In other words, streptomycin is a valuable and useful antibiotic in the treatment of a limited number of infections, some of which are exceedingly rare, at least in Minnesota.

These observations bring to me a question which I would like to lay before you. Who is using all the streptomycin that is being sold? For what is it being used? I am bold enough to suggest that some of our colleagues are treating temperature charts and not the microbes which cause the infection. The fact that streptomycin is not completely without toxic effects should be kept in mind. Prolonged use of streptomycin in amounts of more than 1 gm. per day by any method other than the oral route inevitably will have a toxic effect on the eighth nerve, and a disturbance in vestibular function will result. It is essential, therefore, that more care be exercised in the routine use of this antibiotic.

I should say a word about the oral use of streptomycin. When streptomycin is given by mouth, it does not enter the blood stream and, therefore, it can be given with safety in rather large doses for certain purposes. Two to four grams per day can be given by mouth in four divided doses in the preoperative preparation of patients who are to undergo surgical procedures on the bowel. This is an effective way of reducing the bacterial flora of the intestinal tract. Furthermore, this method is effective in the prevention and the treatment of infections of the urinary tract which on occasion may follow ureteral transplantations to the large bowel.

Methods of administering streptomycin are well established. I will mention a few. It has been our practice to use a stock solution of streptomycin for intramuscular administration. This solu-

tion contains 200 mg. of streptomycin per cubic centimeter of saline solution or distilled water. The average daily dose consists of 1.5 c.c. of this stock solution given every three hours by the intramuscular route. This solution is fairly stable. When streptomycin is to be administered in combination with penicillin, the stock solution contains 100 mg. of streptomycin and 20,000 units of penicillin per cubic centimeter. This solution should be made up fresh every two or three days. For intrathecal administration, it is recommended that 100 mg. of streptomycin be administered in 10 c.c. of saline solution. For inhalation or nebulization therapy, the solutions contain 50 to 100 mg. of streptomycin per cubic centimeter. It is well established that streptomycin may be administered alone or in combination with penicillin. The average daily dose of streptomycin employed for the treatment of severe infections should be 2 to 3 gm. In the treatment of acute infections, it is seldom necessary to employ this amount for longer than ten to fourteen days. In fact, there are some acute infections, such as those of the urinary tract, in which the total duration of treatment probably should not exceed five to seven days. Prolonged periods of treatment with streptomycin are seldom justified except in cases of tuberculosis and some types of brucellosis, particularly those in which the brucellosis is complicated by infection involving the bone or other structures. In this latter situation the same dose schedule which has been recommended for the treatment of tuberculosis is adopted. In other words, the average daily dose is 1 gm. If satisfactory results are to follow the treatment of most acute infections, they will do so within ten to fourteen days of treatment.

Organisms at times will become resistant to streptomycin with incredible rapidity. In addition to the toxic effect on the eighth nerve, cutaneous toxic reactions may occasionally result from streptomycin therapy. These may take the form of either dermatitis or urticaria. Occupational dermatitis often develops among individuals who handle streptomycin, and this is also an important matter.

Streptomycin is, indeed, a useful antibiotic but its usefulness is being seriously hampered by the lack of better selection of cases in which it is to be used. Let me repeat: "Treat the bacteria and not the fever."

Newer Antibiotics

I have been asked to mention some of the newer antibiotics under investigation. The newer antibiotics that I am about to discuss have not been released for general use but they are important enough to justify consideration.

Bacitracin.—Bacitracin is one of the newer antibiotic agents. It was described by Johnson, Anker and Meleney in 1945. It is elaborated by a strain of Bacillus subtilis. Like most antibiotic agents of bacterial origin, it has certain toxic properties. Bacitracin is a rather stable and freely soluble substance. It has a bacterial spectrum not unlike that of penicillin; that is, it is effective against organisms which in general are sensitive to penicillin. For that, among other reasons, it has not been widely used in the treatment of those conditions in which penicillin continues to prove effective. In addition to inhibiting many organisms present in pyogenic infections it appears to be effective against the organisms responsible for so-called gas infections. Like penicillin, it also appears to have some antispirochetal activity. To date, its clinical application[10] has been mainly as a local agent in the treatment of a variety of infections. It can be used in the form of an ointment containing 500 units per gram or as an aqueous solution containing approximately 500 units per cubic centimeter. Eagle and Fleischman have used the material in experimental studies in combination with penicillin in the treatment of syphilis. My colleagues, F. R. Heilman and D. R. Nichols, and I have investigated this agent for some time. We have not felt that the material was sufficiently safe to use it systemically except in a very few instances. Its use is limited because of the nephrotoxic effect which occurs when it is administered to animals as well as to human beings. In human beings albuminuria is practically always seen following its systemic administration. The recommended dose for intramuscular injection is approximately 20,000 units four times per day. If it is to be given by intramuscular injection, great caution should be exercised.

Chloromycetin.—Chloromycetin is an interesting antibiotic which was first described by Ehrlich and his colleagues. This antibiotic is obtained from a strain of Streptomyces; it is a fairly stable, water-soluble substance which can

be administered by the oral route. To date, the most important observation about this substance has to do with its effectiveness against certain rickettsiae.[14] Smadel and his associates[15] have studied this antibiotic rather extensively and have used it clinically in the treatment of murine and scrub typhus. Payne and his colleagues also have reported its use in the treatment of epidemic typhus. According to their observations, the patients begin convalescence within a few days. The recommended dose by mouth is 10 to 15 mg. per kilogram of body weight. The material may be administered by mouth or intravenously, provided it is given slowly. No serious toxic effects have been reported after its use. I have had no experience with this material.

Polymyxin and Aerosporin.—Almost simultaneously these two substances were announced. The first American reports on polymyxin were made by Benedict and Langlykke of the Northern Regional Research Laboratory and by Stansly, Shepherd and White of Johns Hopkins Hospital. This substance is elaborated by Bacillus polymyxa and, therefore, it was given the name "polymyxin." From the early reports it appeared that this substance was effective against some very important Gram-negative microbes including organisms which belong to the colon-typhoid-dysentery group. Rather extensive clinical studies have been made by Schoenbach, Bryer, Bliss and Long at Johns Hopkins Hospital. Polymyxin appears to be a little more toxic than streptomycin but to date no serious difficulties have been encountered except some evidence of renal irritation. My colleagues and I have used polymyxin in the treatment of a few severe infections of the blood stream owing to Gram-negative organisms which were, or had become, resistant to streptomycin. We have been impressed with its effectiveness in some of these cases; however, our clinical studies have not progressed to a point which would justify any final conclusion. At any rate, it appears to be a promising antibiotic.

Aerosporin, which is probably closely related, if not identical, to polymyxin, was reported by the British investigators Ainsworth, Brown and Brownlee. As I have already said, this report appeared almost simultaneously with the report on polymyxin. Aerosporin is elaborated by Bacillus aerosporus and for that reason was called "aerosporin" by the investigators in England. Brownlee and Bushby have studied this substance intensively. Among the important pathogenic organisms against which it is effective are Salmonella typhosa, Hemophilus pertussis and Escherichia coli, as well as many other Gram-negative pathogens. These investigators[3] have pointed out that it was extremely difficult to induce organisms to become resistant to aerosporin. This is an observation of great practical importance. Swift was encouraged by the results obtained from this treatment in 10 cases of whooping cough. This is another interesting substance but it will require further observation before any final statements can be made concerning its clinical use.

Comment

As all realize, I am sure, the antibiotics present an active, ever-broadening subject for study. I would like to re-emphasize, however, that physicians must prepare themselves to use these substances intelligently. This can be accomplished only by closer collaboration of the clinical bacteriologist and the clinical investigator.

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SUMMARY OF SYMPOSIUM ON ANTIBIOTICS

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YOU have heard three excellent presentations and there is little for me to add except to emphasize one or two points. I should like to stress what Dr. Boyer has had to say concerning the potential toxicity of penicillin. The reactions that this antibiotic induces may be very severe, requiring hospitalization for many days. It is not unusual for the following to happen: an individual with a relatively benign upper respiratory infection is given one or two injections of penicillin, and there ensues a delayed type of reaction simulating serum sickness. While eventual recovery occurs, the patient in the meantime is exceedingly uncomfortable and is incapacitated for many days. While the many advantages of penicillin outweigh the disadvantages of the drug, its virtues should not be abused.

A question of interest to physicians is, with the widespread use of penicillin are not strains of bacteria becoming resistant to the action of the drug? Fortunately, this has not become a serious problem in clinical medicine with the one exception of staphylococcic infections. In several instances highly penicillin-resistant strains of staphylococci have been isolated from tissues or blood of patients at the University Hospitals. In some cases, streptomycin has been used successfully. On the other hand, I do not know of a single instance where a strain of gonococcus has become resistant to penicillin in the patient. This also applies to hemolytic streptococci and pneumococci. One of the outstanding features of penicillin is its failure to induce penicillin-resistant strains of bacteria on a broad scale, such as has occurred with the sulfonamides.

I should like to append a few remarks about the administration of penicillin. Indeed, the man in general practice must be quite confused as a result of the various penicillin products that have reached the market. Much attention today in commercial circles is being focused on penicillin preparations which when injected will be slowly absorbed. High-pressure sales forces are dispatching air mail letters to the medical profession describing the excellence of their new product, which is fitted to yield the maximum results from a single injection of penicillin. As far as we are concerned at the University Hospitals, we have not subscribed to the routine use of any of the products of penicillin which produce delayed absorption. No one has convinced us that sustained and demonstrable levels of penicillin in the blood are necessary in the treatment of bacterial infections. We prefer the use of crystalline penicillin in the form of aqueous solution of the sodium G salt. Furthermore, in the treatment of systemic disease due to many species of bacteria, such as pneumococcic infections and hemolytic streptococcic disease, two or three injections a day of aqueous solutions of penicillin G are given. In the treatment of the average case of lobar pneumonia, 100,000 units every eight to twelve hours are sufficient. In the treatment of subacute bacterial endocarditis and staphylococcic bacteriemia it may be desirable to give larger doses of penicillin at more frequent intervals, that is, every three hours. In the case of relatively resistant strains of streptococcus viridans or staphylococcus, one may administer intravenously 1 million units of crystalline penicillin G in 10 ml. of saline solution. This will produce immediate blood concentrations of over 100 units per ml. Repeated injections of this magnitude may be employed.

There is one additional point that may be made about streptomycin. When this agent is used in the treatment of urinary tract infections it is important to insure an alkaline urine by the administration of alkalies. There appears to be no doubt that the larger the dose the more likely is the clinician to encounter toxic reactions, especially disturbances in vestibular dysfunction. There must be but a rare instance when it becomes necessary to administer more than two grams of streptomycin daily. In using streptomycin in the treatment of brucellosis at the University Hospitals, our policy at present is to give 0.5 gram intramuscularly every eight hours for ten days. At the same time that streptomycin is started, sulfadiazine is administered orally with an initial dose of 3 to 4 grams and then 1 gram every four hours for ten days. Administration of both drugs is discontinued at the end of ten days of treatment.

Again, I should like to express the appreciation for the Association to these men for the excellent presentations that they have made.

THE FIRST LINE OF DEFENSE

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POINTS 3 and 4 of the National Health Program of the American Medical Association, adopted by the Board of Trustees and the Council on Medical Service, February 14, 1946, projected the broad objectives of the medical profession in the field of maternal and child welfare. These two parts of the program are as follows:

Point No. 3.—The procedures established by modern medicine for advice to the prospective mother and for *adequate care in childbirth* should be made available to all at a price that they can afford to pay. When local funds are lacking for the care of those unable to pay, federal aid should be supplied with funds administered through local or state agencies.

Point No. 4.—The child should have throughout infancy *proper attention, including scientific nutrition, immunization against preventable disease and other services included in infant welfare.* Such services are best supplied by personal contact between the mother and the individual physician but may be provided through child care and infant welfare stations administered under local auspices with support by tax funds whenever the need can be shown.

These objectives are primarily those of the nucleus of an over-all health program. They are concerned with the preventive phase of medicine and public health; "the first line of defense." Prevention of disease is the logical approach to any over-all health program. I should like to emphasize that in speaking of disease and health one should refer, not to physical health alone, but to mental health as well. Mind and body are so closely related and intertwined that to treat them separately, especially in a preventive health program, would be to overlook the whole in focusing on one specific part.

Preventive medicine has been receiving more attention in recent years than it received previously. Not long ago its connotations were more or less limited to purely immunizing procedures for the prevention of some of the communicable diseases. Now more and more it is being recognized that the field is much greater than this one important area. Preventive medicine begins to deal with the individual at the time of conception and theoretically ends with his death from senility. Thus in the over-all health program one can see how the aforementioned points in the National Health Program can be interpreted as a foundation for the whole structure.

"To prevent" is defined usually as "to keep from happening." As just one example of the "to keep from happening" one may cite the problem of premature birth. Prematurity is now the leading cause of death in the first year of life and one of the leading causes for all ages. If by improved prenatal care premature births can be substantially reduced, this approach would seem to be just as important as that of the care of the premature baby after it has arrived. In any kind of a program where all phases are so important, it is difficult to have the vision to place each phase in its position of relative importance. To implement an over-all health program we should not this year stress prenatal care, next year adequate nutrition, the next immunization, and the next mental hygiene, and so forth. On the contrary, we must synchronize all of these phases to the best of our ability into one concerted and continuous effort.

It is quite human to have a rather practical "dollars and cents" viewpoint of things and we are prone to make evaluations in that light. We all would probably desire "value received" for any investment. Many investments made today are in anticipation of "value received" in the future. It would then, to most of us, seem logical to spend $10 today to prevent the expenditure of $100 perhaps next month. That is somewhat of an oversimplification of the purpose of preventive medicine, but from the purely monetary viewpoint would it not seem advisable to spend $1,000 each year to implement an immunization program against smallpox rather than to spend $10,000 for the care of patients who have the disease?

One feels that, if a present-day approach is used, mental disease as well as physical disease may be to some degree preventable. The total cost of the care of mental patients is now a sizable portion of the money expended for medical and hospital services. Is it illogical to assume that an investment in the prevention of mental

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disease will bring a tenfold return in a reduction of the cost of care of the mentally ill patient?

I should like to consider points 3 and 4 in the National Health Program more in detail and to make some attempt at personal interpretation. What *are* the procedures established by modern medicine for advice to the prospective mother? Today's modern medicine may not be so modern tomorrow. The same must be applied to the term "adequate." It is almost impossible to define "adequate" in relation to a program such as this. The concept of adequacy is ever-changing, as well it should be. What was "adequate" for our grandfathers we would no doubt consider inadequate for ourselves and what we may deem adequate in our day may just as surely be termed totally inadequate by our grandchildren. Adequacy, therefore, may be one of those unobtainable goals by which we progress—always striving toward the goal just beyond our reach.

Advice to the prospective mother may, for the sake of discussion, be divided into physical, mental and nutritional. One is hesitant to make a division even for the sake of discussion for fear of implying a separation and a specificity that are entirely undesirable. The physical advice will include an evaluation of the general health of the mother. Is there any illness or abnormality present that pregnancy will affect in a way harmful to her or the baby? If so, is it amenable to treatment? Most obstetricians feel that this evaluation should be made before *pregnancy* occurs, but *certainly* as soon as it is suspected. After the initial examination it is desirable that the mother be seen regularly throughout the pregnancy. In this way both maternal and infant morbidity and mortality rates may be substantially reduced. The early detection of any of the complications of pregnancy may be life-saving to the mother. Aiding the mother to carry the baby to full term may indeed be life-saving to the baby as well.

The mental and emotional environment of the baby may be well set in this prenatal period. Intelligent, understanding counseling will better prepare the mother to care for her baby. Not a small part of this advice may be devoted to telling her what babies are like and what she may expect in the way of growth and development. A great many tensions and anxieties may be lightened or prevented by some effort to anticipate and interpret, at each stage of development, the baby's normal activities. This is especially true of mothers with their first babies.

Many of us feel now that modern medicine rather shortchanged itself, by improving maternal care to the exclusion of similar thought for the baby. With an ever-increasing number of hospital births occurring, great strides have been made in the reduction of maternal mortality rates. We are realizing, however, that the *emotional* welfare of the newly born baby was rather forgotten. In the desire to maintain him in a relatively sterile atmosphere as far as germs were concerned we made the atmosphere even more sterile in the way of affectionate infant-mother, and even infant-father, relationships. From the mother's point of view the modern hospital situation is usually unsatisfactory because she is constantly anxious about the welfare of her baby, whom she sees only at nursing time. From the infant's standpoint, his desires are not attended to as they arise, because, out of necessity, the organization of the obstetric floor and nursery must be maintained on a rather definite time schedule. If he happens to become hungry at 2:30 when it is visiting time, he is "just plain out of luck."

Poor father! He is definitely looked on as carrying a very special kind of germ. He must view this new heir through a wall of glass, is shooed out of the room when the baby is with the mother, and to consider the possibility of allowing him to *hold* the baby would be revolutionary! Can you see any remote similarity between this situation and a normal family relationship? When babies were born at home these barriers weren't present. There must be a compromise somehow. This compromise is being made on a trial basis in several sections of the country at present. It is commonly known as the "rooming-in" plan and consists simply in having the baby's crib in the mother's room, thus restoring the normal relationship. The baby's needs are attended to as soon as they arise. The mother can see her baby at any minute of the day or night and know that he is all right. She may observe the ordinary techniques of baby care and in a short time take over completely with full confidence. The father is allowed to see his family together and even to hold the baby.

The attitude of the mother toward breast feeding may be determined during the prenatal period and eventually influence not only the baby's well-being but the mother's as well. Breast feeding is "coming back." The incidence of breast feeding will increase undoubtedly as it *again* comes to be the accepted method.

Advice about nutrition during the prenatal period is also being recognized as an extremely important preventive effort. It should have the practical objective of helping the mother to choose the correct diet with due cognizance of the present-day cost of foods, their nutritional value and her *food budget.*

What is adequate care in childbirth? Categorically one would think of adequate care as that which results in the least possible morbidity or mortality rate in either baby or mother. In the majority of confinements the whole process is a purely normal physiologic event and the medical personnel are merely assistants. It is in those situations in which nature needs more than ordinary help that the question of adequate care in childbirth becomes important. Many of these complicating situations may be anticipated if there has been regular prenatal care. Others may be entirely unpredictable and present real emergencies. The problem, then, is first, to have medical personnel trained in the diagnosis and treatment of obstetric problems and emergencies; second, to detect abnormalities early so that the problems may be met *before* they become emergencies—this either in prenatal or in obstetric care; and third, the purely physical need of having the patient and the obstetrician together at the right time. This last point is somewhat of a problem even in the large urban communities and is much more definitely a problem in the rural areas. It has been solved in some regions by having ambulance service available at all times to transport the mothers to hospitals. Thus by bringing the patient to the obstetrician rather than having him make long trips to the patient, he is enabled to give service to more people and is in a position where he has equipment and personnel immediately available for almost any complication that may arise. The alternative, in order to provide even an approximation of good medical care, might be to have available a mobile obstetric unit. However, babies notoriously do not arrive "on schedule" and it would be somewhat disrupting to be delivering Mrs. Jones' baby just at the minute Mrs. Brown's baby was arriving ten miles to the east.

These problems are being worked out and we are certainly going forward rather than backward. One can hardly expect an elaborately appointed and staffed obstetric service to be immediately available in the most remote and sparsely populated parts of our country any more than one would expect elaborate installations in other community enterprises such as fire protection, supermarkets and apartment houses. Neither is elaborate equipment necessary. The well-trained physician in general practice has done, is doing and will continue to do a good job of obstetrics. Getting the patient to the physician rather than the reverse seems a more practical approach in the more remote areas. Real life-saving emergencies are rare and instances in which careful transportation of the patient is contraindicated are still rarer. If the physician has a chance to anticipate difficulty in prenatal visits he may make arrangements beforehand for consultation or delivery in a larger center where facilities are available to handle the problem.

Now let us assume that point 3, relative to the mothers, has been carried out to the best ability of all concerned and that we have a brand-new member of the community on our hands.

Point 4, care of the baby, now comes into sharper focus. There should be no definite demarcation between obstetric and pediatric care, but a real continuity of service. It is much like a relay race in which for a very short time the obstetric and pediatric practitioners are both carrying the baton. However, in by far the majority of instances it is the physician in general practice who is running the whole race and plays the role of a steady distance runner rather than of the sprinter.

I should like to comment briefly on the statement made in point 4 that "such services," referring to preventive pediatric care, "are best supplied by personal contact between the mother and the individual physician." This element of personal contact, personal interest and mutual confidence is that indefinable something for which there can be no complete substitute. Although the usual large well-baby conferences or clinics may approximate the relationship and provide excellent service, the rapport between mother, baby and physician is not quite the same.

In Rochester we conduct ten well-baby clinics a week in the city and several out in the smaller communities of Olmsted County each month. These clinics are staffed by pediatric Fellows of the Mayo Foundation and consultants from the Section on Pediatrics of the Mayo Clinic and from the Rochester Child Health Institute. The methods, general philosophy of growth, and devel-

opment and infant care are uniform. We are attempting to provide a comprehensive preventive medical program for all the children of the community. One of our greatest problems is to achieve a continuity of personal contact between the mothers and the physicians. The Fellow's period of service in the clinics is only three months. He and the patient are just beginning to know each other when another physician comes on the service. The consultants, however, play a supervisory role and are present or available at each clinic. The same consultants have supervised the care of the baby in the hospital during the newborn period and have talked with the mother each day at that time. In this way we hope to give some continuity of care and personal contact, but we feel that it falls short of the situation in which the parents have personally chosen the physician and this bond continues throughout infancy, childhood and the rest of life. An automobile is rather an impersonal thing; yet how many of us have a favorite garage and mechanic to whom we go when in car trouble? Another mechanic may do the work every bit as well but if we don't know him we lack confidence in the job done. When one realizes how prominent the element of personal confidence is even with such inanimate things as automobiles and groceries it is understandable that this relationship is infinitely more important in child care. Are not our children our greatest and most important possessions and responsibilities?

I shall therefore assume that the most desirable situation would be that in which the preventive program is carried out by the private physician. When this situation is not obtainable, then the child care and infant welfare stations will be a substitute and should be as complete a substitute as possible.

To define or interpret what may be "proper attention throughout infancy" is again surprisingly difficult. Minimal standards can be only approximations and maximal or ideal standards are unknown. Two years ago the American Academy of Pediatrics, with the assistance of the Children's Bureau and the United States Public Health Service, initiated a study of child health services throughout the United States. This includes, as well, an attempt to evaluate pediatric education in medical schools and hospitals. The analysis of these data together with recommendations will be published sometime this year. It is anticipated that this study will give a comprehensive and fairly accurate picture of the present status of child health services and enable communities, especially on a state level, to improve their local services. It will provide a factual basis for future planning. It is becoming more evident and perfectly logical that, before the problem of distribution of child care can be effectively met, more emphasis on pediatric education must be made in medical schools and subsequent intern and postgraduate programs. Improvement of rural health facilities, however, need not wait on the development of a long-term educational program but may proceed simultaneously as part of the training program.

There are some phases of infant care that are felt to be basic and can serve as a foundation for the phrase "proper care." Nutritional advice was one of the first reasons for pediatrics to come into existence as a specialty. Advances in infant feeding in the past fifty years have been tremendous and have resulted in great simplification of the problem. As knowledge has increased, mortality rates from nutritional disturbances have decreased. Infantile diarrhea or "cholera morbus" is now insignificant in comparison to the problem it was a generation ago. The vitamin deficiencies such as rickets and scurvy are almost medical curiosities today. Nutritional advice should not stop after the "formula" period but should continue throughout childhood and on to adult life.

Immunization against preventable disease has most certainly been proved to be effective. The skepticism and superstition of the public concerning these procedures are becoming less evident. There are still some parents who say: "I wasn't vaccinated and I didn't get smallpox, so why should my baby be vaccinated?" They were indeed fortunate that they did not get smallpox but are they justified in taking the gamble for their child? Unfortunately, the baby or child has no choice in the decision. It is entirely the parents' responsibility. If a child seriously ill with diphtheria could say, "Mommy and Daddy, why didn't I get shots like Bobby did?" what could their answer be if they had assumed the responsibility of neglecting to have the immunizations done? At the present time effective protection can be offered against smallpox, diphtheria, whooping cough and tetanus. In some communities and under certain conditions scarlet fever, typhoid,

typhus, yellow fever, tuberculosis and cholera immunizations may be indicated. Universal immunization programs should be the concern and responsibility of all of us in the medical and allied professions. When smallpox and diphtheria are present in our community or state, we should each one of us feel that neglect of universal immunization is a *personal* failure and should do something about it.

The phrase "and other services included in infant welfare" could be interpreted to cover almost anything. However, I should like to feel that it applies primarily to the service of interpreting the infant's needs and behavior to the parents and of helping them appreciate what is normal growth and development. This service has been termed "mental hygiene." Since "mental hygiene" has somewhat the suggestion of abnormality, the title "child guidance," though not entirely satisfactory, seems more appropriate. Pediatric education, in its realization that there is not only a "sick child" to be considered but also a "well child," is putting more emphasis on the teaching of what a normal child is like. If parental guidance for a child can be adjusted to his normal capabilities and growth trends, his attainment of acceptable social behavior or conformity will be smoother. He will develop greater emotional stability if demands are made consistent with his abilities.

It is the nature of human life to be beset by daily crises of some degree. It certainly seems to be true in our world of today. One may assume that it will be not too different in the world of tomorrow. The patterns may change, but basically the problems of food, shelter and getting along with our neighbors will probably be similar. Therefore if, by child guidance, one can establish a smooth development, an understanding between child and parent and a chance for individual potentialities to develop, the frustrations of adult life may be less jolting. This guidance may be achieved through the individual practitioner, through the pediatrician, the public health nurse, the teacher, the social worker or others especially interested and trained in child care. The more deviate problems may require the services of a psychologist or psychiatrist. All of us, including the psychologist and psychiatrist, must first have a basic understanding of the normal.

Therefore, advice to the prospective mother, adequate care in childbirth and proper attention for the child throughout infancy are the objectives of the National Health Program of the American Medical Association. To bring a healthy child into the world and then to keep him healthy in mind and body would certainly seem to be "the first line of defense."

RESEARCH COUNCIL FOR ECONOMIC SECURITY

Voluntary plan for protection against sickness, old age, premature death and other major hazards now cover hundreds of thousands of workers in the Chicago metropolitan area. This was revealed in a recent study, *"Employe Benefit Plans in Chicago,"* just released by the Research Council for Economic Security, Chicago.

Questionnaires were sent to more than 2,000 employers, both large and small. Of these, 35 per cent were returned, reporting on about 700,000 employes. Of this number, 85 per cent have life insurance and about the same number hospital insurance. These are followed by compensation for wage loss due to illness (69 per cent of employes in reporting firms); pension and retirement plans (68 per cent); surgical benefits (50 per cent); and prepaid medical care (6 per cent). These figures apply only to employes in firms which participated. For the entire labor force, the figures would be somewhat lower. Protection by government systems and by individual employes themselves are not included.

"The purpose of the survey," said Gerhard Hirschfeld, Director of the Council, "is to show as accurately as possible how much protection industry provides for its employes on a voluntary basis. Similar surveys, now under way in St. Louis, Cleveland, Pittsburgh, Minneapolis, Saint Paul and other major cities, are expected to throw more light upon the nature and extent of employe benefit plans throughout the country."

The Research Council is a non-profit, non-partisan, privately financed organization engaged in studies in the field of social and economic security. Its chairman is Bertram J. Cahn, President of B. Kuppenheimer & Co.

THE TREATMENT OF OPEN WOUNDS OF THE HAND

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(Continued from November issue.)

Closure of the Wound

The ideal termination of the operation is closure of the wound. Primary closure by some means or other can be accomplished in practically all wounds which have been seen within eight hours of their occurrence.

If suture can be done, it should be accomplished without tension on the skin edges or on any tissue. Tight sutures cause necrosis with resultant tissue autolysis, and what is worse, furnish ready food for the ubiquitous facultative bacteria which thrive on dead tissue.

If closure by suture is impossible, the wound should be closed with some type of skin graft, either a free graft or a pedicle flap. In most cases, a thick split graft is the best choice. It will take very well on fresh wound surfaces and will very often serve as definitive closure. It may be removed in any size required. Very small grafts may be removed from volar surface of the forearm with an ordinary scalpel or razor blade. Larger split grafts will have to come from some other surface, usually the thigh. A dermatome is not necessary, since often the grafts are not large and a good sharp skin graft knife will serve very well and takes less time. The free full-thickness graft is seldom used on the surface of a fresh traumatic wound, since it requires almost perfect conditions for a successful take.

In some instances where there is exposure of bone or tendon, the surgeon may slide a flap of skin from one side of the wound and cover the flap bed with a split graft.

In most cases where bones, joints and tendons are exposed, they must be covered with a pedunculated flap. While the need for an immediate pedicled flap does not often arise, where it is indicated it is of immense value and will save bones and tendons from necrosis, which is certain to follow if they are left bare. Thus, in the degloving injuries, placing the hand at once under an abdominal flap will save the hand, whereas leaving bones and tendons exposed is sure to end in extensive and often irreparable loss. Flaps, however, need not always be large; some very small defects are often best covered with a small flap. For example, the tips of fingers where bone is exposed are best covered with a tiny pedicled flap raised from the opposite chest wall.

The surgeon should learn to take advantage of any adventitious flaps which may present themselves. Thus, the destruction of a finger may leave a sizable flap of skin which may be utilized to close defects of the palm or dorsum.

Secondary Closure

Secondary closure, as was developed during the recent war, should be generally recognized as a method of early closure, almost as satisfactory as primary closure except that primary nerve and tendon suture are not permissible. Wounds which are seen too late for primary closure or which are probably not surgically clean even after careful cleansing, or which for some reason or other cannot be kept under proper surveillance, will have to be left open. Such wounds receive the same initial care as any other wound. Joint capsules are closed if they have been opened, but nerves and tendons are not sutured. The wound surface is covered with a layer of fine mesh gauze and over this is placed a pressure dressing. A splint is applied and the wound left alone unless some untoward symptom arises. At the end of four to six days, the wound is uncovered in the operating room, and if it "looks all right" a closure is accomplished at this time.

Fractured bones may also be reduced often by internal fixation at this time, but it has never seemed logical to perform nerve and tendon repair, largely because of the dissection required to expose the ends and because they would lie in scar tissue. Secondary nerve and tendon repair is performed later after the wound has healed and the tissues have softened up.

The whole success of secondary closure depends upon the care with which the primary cleansing and excision of the wound has been carried out.

If this care has been inadequate, the wound at time of inspection will be found to contain necrotic tissue and often to evidence invasive infection. In such cases, further cleansing and debridement must be done and closure attempted several days later with, however, much less chance of success.

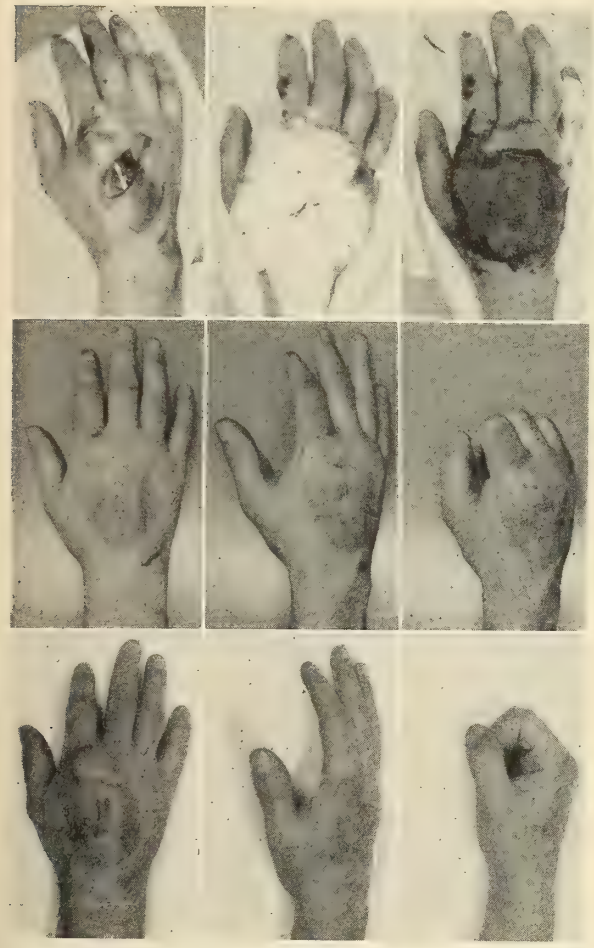


Fig. 3. Crushing burn sustained when hand was caught between a cold roller below, a hot roller above. Some skin actually burned away, remaining skin over large area of dorsum completely devitalized by pressure and third degree burn. Common extensor tendons to index and middle fingers destroyed and ends charred. Immediate excision, two and a-half hours after injury, of all devitalized tissue. Stumps of tendons were sutured to adjacent tendons and a large split graft applied. Upper row shows hand on admission and at time of first dressing six days later. Center row shows hand two months after injury, and lower row, three months after injury.

The Compression Dressing

The use of compression in surgery is a principle of treatment which has been recognized for many years. We owe to Blair and to Koch the present widespread use of it in wound surgery. During the past decade, experimental evidence has been furnished of the value of compression in such conditions as crushing injuries, burns, and other traumas.

The arguments upon which a compression dressing is used are briefly that tissues are ordinarily under a certain physiologic pressure. This pressure counter-balances the pressure of blood in the vessels, supports the arteries and veins going to and coming from a part, and maintains proper relationship between the intra- and extravascular fluids. When these pressure relationships are disturbed following trauma, fluid exchanges within the tissues are out of balance, and swelling occurs. The veins, without their customary external pressure, may dilate and the blood stagnate within them.

In the wounds of the hand this loss of fluid into the tissues leaves in its wake a hard swelling, which takes weeks or months to absorb and results in an extensive disabling fibrosis. Therefore, to prevent this swelling, the re-establishment of the proper pressure relationship is indicated as soon as possible following injury.

The support of the venous return by means of a compression dressing is another important function of the compression dressing. Many times we see a skin flap which has undergone necrosis, not because of the lack of arterial blood supply but because of the venous congestion which occurs.

The plastic surgeons have long emphasized the need for compression on skin flaps, not only to prevent swelling, but also to support the veins. Flaps which ordinarily should live may very well die if this support is lacking.

Dead spaces caused by tissue disruption, under avulsed flaps, et cetera, can be obliterated by a properly adjusted compression dressing. These spaces become filled with blood or serum which may take weeks to absorb and form excellent pabulum for bacterial growth.

Torn and injured tissues and tissues after operation tend to ooze blood and serum into the wound. This oozing may be controlled by properly applied compression. Severe arterial hemorrhage, on the other hand, will not be controlled by a pressure dressing unless it is applied too tightly.

If correctly applied, a compression dressing is soothing and relieves pain. This is partly due to

control of swelling and partly due to the immobilization which compression produces.

I can mention but a few of the conditions in which the compression dressing has proved to be a valuable adjunct to surgery of the hand. In many of these conditions it will make the difference between success and failure. After all operations on the hand, a compression dressing should be applied before the blood pressure cuff has been released. In this way, not only will the postoperative swelling be minimized but the oozing which will occur after operation will be largely controlled. As first aid for injuries of the hand, the dressing should be voluminous and compressive from the start so as to prevent the swelling which will occur between the time the wound is incurred and the time the patient receives definitive care. Closed injuries such as sprains and simple fractures which do not require operative intervention should be dressed in compression from the start, for the reasons noted above. Burns of the hand are best treated by splinting and a compression dressing. Flaps and free skin grafts are dressed with compression dressings. Granulating wounds such as occur after burns or other injuries respond to this treatment, often cleaning up these areas quite rapidly.



Fig. 4. Secondary closure of degloving injury and traumatic amputation. Patient was received for care six days after injury; the wound was clean and granulating and was immediately covered with a split graft. Later, as shown in the lower row, this thin graft was excised and a pedunculated flap placed over the dorsum.

Careful instruction is always needed when an intern is told to apply a compression dressing. Even after observing its application time after time, the new resident seldom applies a compression dressing correctly until he has had several weeks' experience. The dressing must be voluminous and made up of many layers of fluffed-up gauze or mechanics' waste, evenly applied over the entire part. Whatever the material used, it should be soft, elastic and absorbent. It must apply a uniform resilient pressure distributed evenly over the whole area to be compressed and must produce no constriction. It must be firm but not tight. It should cover the whole hand and lower forearm in case of most injuries of the hand, while if the lower forearm is involved, the dressing should go to the elbow or beyond. In applying the dressing to the hand the fingers must be separated by the gauze so that they are not compressed against each other and so that sweaty secretions will not accumulate between them. If a splint is incorporated in the dressings, as it usually is, it must be well padded to prevent the development of pressure areas. It is difficult to tell anyone how snug to make this dressing; one learns from experience. If large amounts of dressings are used, it is difficult to get it too

tight, but it is possible, especially if an elastic bandage containing rubber strands is wound on at full stretch.

Immobilization

In this day of early ambulation and emphasis on early resumption of function, the surgeon is apt to forget that injured tissues require rest. While it is true that following abdominal surgery the patient can frequently be allowed out of bed a few days after even the most serious operation, the surgeon who neglects proper splinting for injuries of the hand is courting disaster. There is probably no surer way of causing breakdown of incisions, rupture of sutured tendons and post-operative infections following surgery of the hand than to neglect to splint the hand afterwards for a sufficiently long period of time to permit the tissues to heal.

In what position should it be splinted; how much of the hand should be splinted; and how long should immobilization be maintained?

The position in which the hand should be splinted depends on the nature of the operation performed and the conditions present. In general, the ideal position in which to splint the hand is the *position of function.* This is the grasping position, in which the wrist is dorsiflexed about 45 degrees, the fingers flexed about 30 degrees at all joints and slightly seperated from each other. The thumb is swung around into a position of abduction and rotation so that its pad faces but does not touch the pads of the fingers. In this position even the slightest motion is sufficient to permit some function, and if the hand should become stiff, is the most useful position. Also, from this position the physical therapist or the patient can most readily restore use. In this position the collateral ligaments of the metacarpo-phalangeal joints and interphalangeal joints are stretched their longest and do not shorten and produce contractures.

The position of function should be used in every case of hand injury except those in which repair of tendons or nerves require relaxation in some other position. The position of function is an excellent one in which to immobilize fractures of the hand. Practically all fractures of the hand can be reduced and held in proper reduction by molding them into reduction over the proper splint and holding them there in the position of function with pressure dressings. Only in very rare instances does it seem indicated to use traction for this purpose. The possibility of reducing fractures of the hand on a firm splint makes it possible to apply a compressive dressing to prevent the post-injury edema and swelling which makes for so much disability.

Sutured flexor tendons must be splinted in relaxation with the wrist and fingers in flexion. Most of the relaxation should be taken up by flexion of the wrist, which may be brought up to 45 degrees. The fingers should not be so acutely flexed. The metacarpo-phalangeal joints should not be flexed beyond 30 degrees. Sutured extensor tendons should be splinted in extension, but here we must extend completely all the affected joints, otherwise, we will end up with tendons too long for proper function.

Muscles paralyzed by division of the motor nerves, should be splinted in relaxation so that the unopposed antagonists will not stretch and damage them. We are familiar with the proper splinting for radial nerve paralysis, but we forget that the small muscles of the hand may be paralyzed and they must also be protected by splinting. Thus, the interossei and lumbricales are protected by a splint which holds the metacarpo-phalangeal joints in slight flexion and holds the thumb in slight adduction. Where the median nerve is divided, the small muscles of the thenar eminence are prevented from stretching by holding the thumb in the grasping position, i.e., rotated and adducted around to face the finger pads.

The application of the splint should become as automatic at the end of the operation as the application of the dressing and should be kept in mind at all times when treating hand wounds and infections.

The length of time that the splint should be kept on will vary somewhat with the condition present. Roughly speaking, the hand should be kept splinted until the tissues have healed sufficiently strong to take over their function without support. While there is no doubt that splinting can be kept up longer than necessary, with resultant stiff joints, it is my feeling that in most cases stiff joints are due to inflammatory exudate and not to splinting *per se.* The usual hand injury without nerve, tendon or bone damage, which heals by primary intention requires splinting for but seven to ten days. Fractures of the hand are usually well enough consolidated in two weeks to permit removal of the splint once daily to allow

the patient to soak the hand in warm, soapy water and begin mobilization. After three or, at most, four weeks, the splint may be discarded.

Divided flexor tendons should be kept splinted without motion for three weeks, following which the splint is gradually straightened out over a period of from one to two weeks, during which time the patient may begin active use within the limits permitted by the splinting. In case of the extensor tendons, the splinting must be kept up about five weeks, since these tendons are more likely to be stretched by the more powerful flexors. Also, in case of the extensors, it is sometimes wise, after daily splinting has been discontinued, to have the patient wear the splint at night for several weeks, since the hand is normally held in flexion during sleep.

Paralyzed muscles should be kept relaxed as long as their nerve supply is lacking, or until some substitution has been provided for the muscle. This may mean wearing a splint for many months in case of the ulnar or median nerves. In these cases, the splints should be such as to permit the patient to carry on his usual activities and still wear the splint.

Follow-Up and After-Care

Fully as important as the initial surgery in case of injuries of the hand is the follow-up care of these patients. Failure to obtain satisfactory results after good surgical treatment is often due to errors in the postoperative management. Failure to maintain immobilization for a sufficiently long period of time accounts for many instances of wound breakdown or tendon rupture after repair.

The initial dressings are seldom changed before the fifth to seventh day, at which time it is well to discontinue the pressure dressing. At this time the suture line is inspected, and if any of the sutures seem to be too tight, they may be snipped. By the seventh to tenth day the sutures may be removed, after which the dressings are changed every second or third day so that sweaty secretions do not accumulate. In case of simple injuries the dressings may be left off entirely at the end of ten days and the patient instructed to soak his hand once daily for fifteen to twenty minutes to limber up the joints. In simple injuries a few days of daily soaking are enough to restore function to normal. In case of tendon repair, the patient must have the hand immobilized for a longer period of time, and the early soakings must be given the hand by the surgeon or his assistant. Only after the end of three weeks is it entirely safe for the patient to start his own daily soakings. The daily soak, a regular institution with us, is not a simple perfunctory washing of the hand, but requires about fifteen minutes of gentle washing in soapy water. The surgeon gives the first few soakings so that the patient "gets the idea" and learns how much he can do. Thereafter, he does this washing himself and is encouraged to massage the hand gently with the warm soapy water and a wash rag. This combination of heat and massage does wonders in mobilizing the hand and in restoring function.

At the end of three weeks following flexor tendon repair, the splint is straightened out somewhat and the patient is allowed to flex the fingers actively, but extension is limited by the splint. This straightened splint he wears for a week or ten days, at which time it is removed entirely, and his further care depends on the rapidity with which he regains function. In a good percentage of cases no formal physical therapy is required, only the daily soakings and the daily use to which the hand is put. If the patient's job is not too strenuous, he is encouraged to go back to work at the end of the fifth or sixth week. If no suitable work can be found for him, he is instructed to do odd jobs around the house, and we have found that dishwashing is a very valuable therapeutic adjunct.

Where skin grafts have been applied, dressings are done on the fifth or sixth day, at which time the silk overties are cut and the pressure roll is removed. Sutures about the graft are also removed, and the pressure and splint are again applied. Dressings are performed every second day and the pressure maintained for a total of fourteen to twenty days. When the grafted area is first completely exposed, the patient is cautioned against injuring the graft, often wearing a protective glove or mitten for awhile. The graft is sensitive to heat and sunlight, to which exposure should be very gradual.

Fractured phalanges and metacarpals may usually be dressed at the end of two weeks, and if other wounds permit, a light protective splint may be applied, which the patient can remove daily for washing. At the end of three weeks, it is usually possible to remove the splint entirely,

but the patient should wear the splint at night for another two weeks.

Operative Technique

A few details of operative technique are of importance. It is not possible to discuss them all, but they deserve mention since so much depends on a careful technique if the surgeon expects to obtain good results in surgery of the hand.

General anesthesia is practically always best for operations on the hand, since the surgeon does not feel so hurried and can work slowly and carefully. The blood pressure cuff which is applied to produce a bloodless field is very uncomfortable for the patient after the first few minutes under local anesthesia. Also, the need for enlarging incisions and wider exposure than may have seemed to be necessary at the start militate against the use of a local anesthetic.

A bloodless field is an essential to a careful operation. Without it the surgeon is seriously handicapped in locating the injured structures and in repairing them when found. The constant sponging that must be done when the field constantly floods with blood is not only time-consuming but traumatizing to the tissues. A bloodless field is best secured with a blood pressure apparatus applied to the arm loosely and covered with a bandage to prevent it from "popping out" when inflated. The arm is held up for a minute to allow the blood to run out of it, and the cuff is then rapidly inflated to 280 mm. Hg. It is kept up to this pressure until the surgeon has completed his cleasing and the excision of the devitalized tissue, and has identified and mobilized the structures requiring repair. The cuff is then deflated, and the wound is covered with a warm moist "lap" pad during the first few minutes of the reactive hyperemia which follows its release. The wound is then inspected, and all bleeders are caught and ligated with fine silk. The arm is again elevated, the cuff inflated, the operation completed and the compression dressing applied before it is finally released. We have never seen any trouble come from this technique, even though the cuff may be on for as long as two hours during the dissection and for well over two hours during repair and until the final dressing is applied. Higher pressures than that mentioned may well cause trouble, and the use of ordinary rubber tourniquets or pneumatic cuffs which produce very high pressures may lead to trouble.

Adequate exposure of the injured structures is necessary and is seldom provided by the wound itself. This is especially true in case of divided tendons which retract well up or down in the tissues and cannot be located through the exposure offered by the wound. To "fish" for tendons with forceps is poor technique, often unsuccessful, and even if the tendons are found, seldom is there enough space in the wound to permit a neat suture. Enlarging incisions are therefore usually required to afford adequate exposure with a minimum of retraction. The enlargement of wound must be done with some consideration. Too often a transverse wound across the wrist or finger is enlarged by a longitudinal incision straight across the center of the wound, producing a cruciate defect which may give good exposure but leaves a badly disabling scar. The nerves and tendons lie directly under this scar for its whole course and are certain to become adherent to it. The four corners of the scar are likely to become necrotic. Later on, as the scar contracts, it produces a flexion contracture of varying severity. If the result of the initial surgery is not successful, the surgeon who undertakes the secondary repair will find himself very much handicapped. The correct lateral incision may be impossible, and to correct the midline scar may entail the application of a pedicled flap. Enlarging incisions follow the same principles which govern elective incisions. The midline of fingers, wrist and forearm should be avoided because of the certainty of contracting scars. Longitudinal incisions on the fingers and forearm should be made along the sides, and if the volar surface is to be crossed, it should be crossed transversely. In the palm the transverse incision is also best, but incisions may follow the longitudinal creases at the borders of the thenar and hypothenar eminences. Incisions should follow as nearly as possible the natural folds of the skin, not necessarily in the creases, but parallel to them. The incisions should be planned so as to produce flaps of skin with subcutaneous tissue under them so that repaired structures lie against subcutaneous fat. When the incisions are deepened, care must be exercised in dividing the pulleys. Only when necessary should the retaining ligaments be divided, otherwise bowing may occur. If it has

been necessary to divide the pulleys, they should be repaired.

Gentleness in handling tissues has been stressed for many years, not only in surgery of the hand but in all surgery. In surgery of the hand, gentleness is an absolute necessity if the surgeon is to attain any sort of results at all. Not only must primary healing of the skin be secured, but the tissues beneath must be soft and without adhesions if function is to result. The tendons must not be handled roughly, squeezed with forceps or with rough gauze. Rough, forceful retraction may traumatize the edges of the wound so as to produce areas of necrosis of the skin and subsequent disturbance in healing and often deeper infection. For the same reason, the introduction into the wound of irritant chemicals is to be avoided, since they are almost certain to lead to exudate and scar.

Exact hemostasis must be secured. As vessels are encountered during dissection, they are caught in forceps and lighted with fine silk. At the time of the first deflation of the blood pressure cuff, the bleeding points not seen during the dissection are picked up and ligated. At the close of the operation the compression dressing is applied before the cuff is finally deflated so that the oozing which would occur from the freshly divided surfaces is controlled by pressure.

Fine sutures and ligatures are used so as to leave as little foreign material in the wound as possible at the close. We prefer the use of silk since it is very strong for its size and is very slightly irritant. Cotton and steel wire are also excellent for use in the hand. The main point is that sutures be as small as possible and still accomplish the job.

Secondary Repair

The matter of secondary repair of divided nerves and tendons of the hand cannot be gone into at this time. This, however, can be said: The surgeon who treats an acute injury of the hand in which he does not believe nerves and tendons should be repaired primarily should remember that secondary repairs are almost as good as primary repairs if the initial wound has healed by primary intention, or even if an early secondary closure was performed. He should not hesitate to omit nerve and tendon suture if the situation is not ideal.

PROPYLTHIOURACIL

(6-propyl-2-thiouracil.—$C_7H_{10}N_2OS$.—M. W. 170.226)

Actions and Uses.—Propylthiouracil interferes with the formation of thyroxin by the thyroid gland. It is useful in the treatment of hyperthyroidism, thyrotoxicosis and thyroiditis. It is of no value and should not be used in other derangements of thyroid activity or in conditions not associated with hyperthyroidism.

Since propylthiouracil does not inactivate or interfere with the action of thyroxin already formed and stored in the gland, the effects of propylthiouracil medication do not appear until this store of thyroxin has been utilized. It may take several days to several weeks for the signs of decreased thyroid activity to become manifest, particularly if the patient has received previous iodine therapy.

Not all patients experience a permanent remission following propylthiouracil therapy, and the duration of treatment necessary to secure permanent relief from hyperthyroidism has not been determined. On the basis of the available information, it can be recommended only that propylthiouracil be used for preoperative treatment or for those patients for whom operation is contraindicated. The wisdom of depending on propylthiouracil as a substitute for operative procedure can be determined only by following the results of investigations carried on for longer periods.

Propylthiouracil is capable of producing adverse reactions in some patients. The incidence and severity of these reactions are unpredictable, but they occur with less frequency than do those following medication with the parent compound, thiouracil. The severest complication of propylthiouracil therapy is granulocytopenia. Less severe reactions may include leukopenia, drug fever and dermatitis. The drug should be discontinued and appropriate therapy commenced immediately on the detection of signs of any of these complications.

Since the mild and the juvenile types of hyperthyroidism can frequently be controlled adequately by iodine therapy alone, propylthiouracil should not be used for these patients unless the safer form of therapy proves ineffective.

Dosage.—For severe cases of hyperthyroidism, initial doses of 50 mg. of propylthiouracil every eight hours appear to be effective in routine treatment, and 50 mg. twice daily in milder cases. Iodine should be administered for two or three weeks immediately before thyroidectomy.

The effective dosage of propylthiouracil should be continued until all signs and symptoms of the disease have been brought under control. Adequate maintenance dosage may best be established by determinations of the basal metabolic rate. *Patients should be instructed to cease medication and report to their physician immediately if any adverse symptoms such as sore throat, fever, coryza or malaise are experienced.*—New and Non-Official Remedies, J.A.M.A., 138:429 (Oct. 9) 1948.

CHRONIC SCHISTOSOMIASIS JAPONICA DIAGNOSED BY RECTAL BIOPSY

Report of Case

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PRACTICALLY all of the cases of schistosomiasis in the armed forces during the last war were acquired on the Philippine Island of Leyte during late 1944. Approximately 1,500 cases were treated while in the service, and it is estimated that an equivalent number, less severely infected on the average, went undiagnosed.[7] The latter would be expected to present the most difficult diagnostic problems, particularly when presence of ova in the stools is used as the criterion. There probably have been few new cases diagnosed in veterans to date. The present case is the first one seen at the Minneapolis Veterans Hospital. It illustrates the need for alertness to the possibility of schistosomiasis in a veteran who has been on Leyte. It also illustrates the difficulties inherent in the detection of the early chronic form of schistosomiasis japonica and demonstrates a useful technique for diagnosis.

Case Report

First Admission.—R. R., a twenty-nine-year-old white male farmer, was admitted to the hospital for the first time on September 30, 1947, complaining of recurrent diarrhea and right upper quadrant abdominal pain.

His first episodes of diarrhea occurred in November, 1944, following three weeks of frequent exposure in rice paddies, streams, and ditches on Leyte. He had high fever and severe diarrhea for eight days and was treated nonspecifically with temporary relief of his symptoms. However, he continued to have intermittent diarrhea once or twice weekly and was eventually hospitalized in a station hospital on Okinawa for forty-four days (Aug. 12 to Sept. 25, 1945). During this hospitalization he had eosinophilia up to 36 per cent. Fourteen stool examinations were made and on one occasion cysts of E. histolytica were found. No other parasites of significance were noted. Proctoscopic examination was said to be negative. No statement regarding the size of his liver or spleen was recorded. He returned to his unit improved following treatment for amebiasis, but continued to have short bouts of explosive, cramping diarrhea, with eight to ten stools a day for periods of one to three days every two to four weeks. He noticed neither blood nor mucus in his stools and did not recall experiencing pruritus, urticaria, edema, or myalgia during the early course of his illness.

Following his discharge in December, 1945, he noted listlessness and gradual weight loss from 190 to 170 pounds. He fatigued easily but was able to carry on his heavier chores except during spells of diarrhea. One month prior to his admission he first experienced severe, persistent right upper quadrant pain and tenderness which was associated with anorexia. Activity intensified the pain. These symptoms persisted and he noted, in addition, profuse night sweats, recurrent diarrhea, and weight loss of five pounds. There was no nausea, vomiting, hematemesis, melena, dark urine, or jaundice.

He had a past history of jaundice at age eleven and yellow fever vaccination in 1942.

Physical examination on admission revealed a well-developed, well-nourished, six-foot white male weighing 165 pounds. His heart and lungs were normal. Blood pressure was 105/68, pulse 65. His liver was palpable 1 to 2 cm. below the costal margin in the midclavicular line and was soft, smooth, and exquisitely tender. There was percussion but no compression tenderness over it. The spleen was not palpable. Moderately enlarged, nontender lymph nodes were felt in the left axilla and in the inguinal regions. Rectal examination was negative. Neurological examination was normal.

Laboratory findings on admission were hemoglobin 15.2 gms. per cent and white blood count 7,350 with 42 per cent pmns., 42 per cent lymphocytes, and 15 per cent eosinophils. Four subsequent blood counts showed approximately the same total count and eosinophilia of 5, 6, 7 and 20 per cent. Sedimentation rate varied from 1 to 3 mm. per hour. Eight urinalyses were negative. Serology was negative. Ten stool examinations for parasites were made during the first four weeks of hospitalization and all were negative with the exception of the first two which contained whip-worm ova. Blood bilirubin was normal on repeated occasions. Eight urine examinations for bile were negative. Two-hour urine urobilinogen values varied from 0.52 to 2.81 Ehrlich units. Cephalin cholesterol flocculation was 3+, 4+ on admission and subsequently dropped to 2+, 2+ over a period of five weeks. Bromsulfalein (5 mg. per kilo dose) retentions on two occasions were 2.8 and 5.5 per cent in forty-five minutes. Routine blood agglutinations, including brucellosis and heterophile antibody titres, were negative. Chest x-ray, flat plate of the abdomen, and barium enema were negative. Proctoscopic examination revealed normal rectal mucosa. The electrocardiogram, which was normal on admission, showed depression of the T waves in the limb leads following a course of emetine.

Hospital Course.—The patient was afebrile except for a slight rise in temperature during the third to fifth

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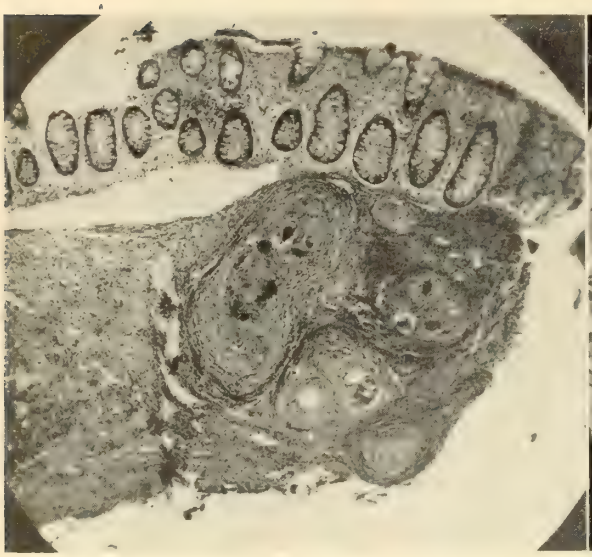


Fig. 1. Biopsy specimen from the superior valve of Houston. Low magnification showing submucosal pseudo-tubercles containing nests of Schistosoma japonicum and giant cells. The largest ova measure 60 x 120 micra, and most have thin highly refractile membranes. There is a moderately severe chronic inflammatory reaction surrounding the pseudo-tubercles.

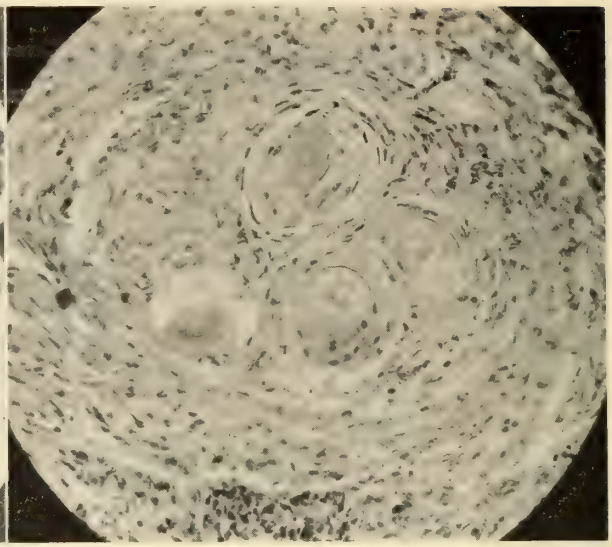


Fig. 2. High power magnification showing encapsulated ova within a pseudo-tubercle.

weeks when he developed an acute left salpingitis and catarrhal otitis media for which he was given penicillin. He was suspected of having amebiasis on admission and was given a course of emetine and diodoquin without effect on his symptoms or course. He continued to have pain and tenderness in the right upper quadrant and his liver increased in size slightly. His spleen became palpable, the enlargement reaching its maximum in the third week when it was 3 cm. below the costal margin. It was never tender. During the fourth week his liver and spleen began to recede and his symptoms improved. By the fifth week the liver was barely palpable, the spleen not palpable, and by the sixth week neither was palpable. There was no correspondence between physical findings and liver function tests. The patient was discharged at the end of the sixth week of hospitalization with the diagnoses of atypical infectious hepatitis and trichuriasis. No treatment was given for the latter because of the liver disease.

Second Admission.—By the time he had reached his home, after a jolting 120-mile bus ride from the hospital, he had recurrent symptoms with pain in the right upper quadrant, malaise, and weakness. He remained at home two weeks during which he noticed in addition enlargement of the lymph nodes in both femoral fossae, particularly the right, and associated weakness of his right lower extremity. He was readmitted to the hospital on November 26, 1947, at which time his liver was enlarged and tender 3 cm. below the costal margin and his spleen was palpable 5 cm. below the costal margin. A moderately enlarged lymph node was again felt in his left axilla in addition to large nodes palpable in the inguinal and femoral regions. Otherwise the examination was unchanged.

Laboratory findings this time revealed the hemoglobin and sedimentation rate to have remained essentially unchanged. White blood count range was 3,500 to 9,000 with pmns. 35 to 63 per cent, lymphocytes 30 to 51 per cent, and eosinophils 2 to 19 per cent. The average of nineteen white blood counts up to the time therapy was completed was 5,370. The average percentage of eosinophils was 13. Bromsulfalein retention was 2 per cent in forty-five minutes. Cephalin cholesterol flocculation was 1+, 2+. Cholesterol was 196 mgs. per cent with 127 mgs. per cent esters. Alkaline phophatase was 7 King-Armstrong units. Plasma proteins were total 7.8, albumin 4.5, and globulin 3.3 gms. per cent. From the time of readmission until completion of therapy with tartar emetic, a period of twelve weeks, thirty-five stools were examined for Schistosoma ova with negative results. Twenty-four of these showed whip-worm ova. The methods of examination for Schistosoma ova included (1) direct smears, (2) gravity sedimentation, (3) modified acid-triton-ether centrifugation, and (4) egg-hatching. Proctoscopic examinations before therapy were negative on four occasions. During three of these examinations scrapings of the anal crypts and rectal mucosa were examined for ova without success. On the fourth examination two punch biopsies were taken from each of the inferior and middle valves of Houston.

Urinalyses were normal. Chest x-ray was negative. Electrocardiograms taken during therapy showed progressive reduction in the amplitude of T waves in the limb leads and development of diphasic T waves in the chest leads. Within four days after completing therapy the T wave depression became less pronounced. A complement fixation test with Schistosome antigen was negative during the third week following readmission, and a skin test with mixed Schistosome antigen (obtained through the courtesy of Dr. Harry Most) was negative during the seventh week.

Hospital Course.—Following readmission schistosomiasis was suggested as a possible diagnosis and attempts were made to find the ova in the feces without success. Bone marrow aspiration at this time revealed myeloid-erythroid hyperplasia with moderate eosinophilia of the marrow. Biopsy of a lymph node in the left axilla showed benign hyperplasia. Two liver biopsies were done during the second and eighth weeks, both showing slight to moderate increase in the number of lymphocytes in the portal spaces and slight increase in the number of eosinophils. No definite diagnosis could be made from them. The patient's symptoms improved on bed rest. By the third week his liver and spleen had receded somewhat, being palpable 1 to 2 cm. below the costal margin. They were stationary thereafter until the ninth week, after which the liver could not be felt below the costal margin, the spleen remaining as before. The liver tenderness decreased progressively.

During the seventh week rectal biopsy was attempted at the suggestion of Dr. C. J. Watson, despite a normal mucosa. Four pieces of tissue were removed, one of which contained ova of Schistosoma japonicum (Figs. 1 and 2). Therapy with tartar emetic was instituted, a total of 444 c.c. of a 0.5 per cent solution of antimony and potassium tartrate (0.799 gms. antimony) being given over a period of five weeks, following the procedure of Most.[7] Toxic reactions were transitory pain and stiffness in the muscles, nausea, and depressed T waves in the electrocardiogram. By the time treatment was completed the patient noted appreciable relief from his right upper quadrant pain and felt stronger. Rectal biopsies were repeated upon completion of therapy, fragments being taken from each of the three valves of Houston. The fragment from the uppermost valve showed submucosal pseudo-tubercles with nests of encapsulated ova similar to the pre-treatment biopsy. The other two fragments were normal.

During a three-week observation period following therapy for schistosomiasis the patient remained asymptomatic. His spleen remained palpable 2 cm. below the costal margin. His liver was no longer tender. The white blood count, which had been depressed slightly, returned to normal levels, and the eosinophilia dropped from 18 to 5 per cent. His whip-worm infestation was successfully treated with leche de higueron. He was discharged during the fifteenth week of his second admission, a total of twenty-three weeks since he was first hospitalized.

Discussion

Clinical Course.—The course of schistosomiasis japonica is customarily divided into three stages of variable length.[1,2,7,11]

The *first stage* or incubation period begins with the penetration of the body by the cercariae and ends with the pairing of the mature worms in the mesenteric vessels. It generally lasts five to seven weeks.

In the *second or acute stage* the female worms deposit eggs in the small vessels of the intestinal wall from which some are extruded into the lumen, and others are carried into the draining lymph nodes and liver as well as other abdominal organs. This stage generally lasts about three to four months. The symptoms of the first and second stages overlap greatly.

In general, in addition to new findings, there is accentuation, during the latter stage, of the symptoms which began to appear during the incubation period. The findings that one may note during these periods are the following: local pruritus, urticaria, edema, cough; chills, fever, sweats, headache, lethargy; myalgia, arthralgia, rigidity on neck rotation; anorexia, diarrhea, weight loss, fatigue; abdominal fullness, pain, and tenderness; enlarged tender liver, splenomegaly; eosinophilia, yellow nodules in rectosigmoid; jaundice, anemia, leukocytosis. In addition lung infiltrations, skin lesions, neurological complications, and vascular occlusions in the toes are occasionally encountered.

The *third or chronic stage* is a period of continued tissue destruction and proliferation. It is properly subdivided into early chronic and late chronic periods. The former is a prolonged interval of gradual tissue fibrosis about which relatively little is recorded in the literature. The latter appears about three to five years after the onset of the disease and is characterized by the development of hepatic cirrhosis and its consequences; splenomegaly; thickening and fibrosis of the intestinal wall, mesentery, and omentum; papilloma formation; and general deterioration and debility.

The clinical course as classically described has been based by and large on observations in native populations where multiple parasitic infestations, reinfection, and nutritional deficiencies are common. It seems logical to expect that the course among healthy American soldiers who were usually exposed a relatively short time and whose nutrition was carefully maintained should be modified appreciably, particularly in those treated early. Such was the case in a large group of patients seen by Mason et al[6] during the early chronic stage of the disease, about six months after the acute process had subsided.

The present case was diagnosed three years after exposure and represents a later phase of the early chronic stage of the disease. Despite the prolonged course, recurrent clinical manifestations, and lack of treatment, he appeared well-nourished and, with the exception of the periods

when diarrhea recurred, was able to keep up his farm duties. Liver function studies at the height of his illness showed but slight abnormality, and two liver biopsies showed essentially normal tissue with slight evidence of chronic inflammation in the portal spaces. X-ray studies of his gastrointestinal tract were normal. Thus he presented fewer abnormalities than one might have anticipated at this time from the textbook descriptions of the disease. It appears not unlikely that the progress of the pathological process in Americans may be retarded, prolonging the early chronic phase of the untreated disease several years beyond its usual duration as classically described. With this in mind one is less likely to rule out a potential case because the abnormalities present are not commensurate with the duration of symptoms.

Rectal Biopsy.—Diagnosis of schistosomiasis has until recently depended upon finding the ova in the stools. This is at best a tedious process. In the chronic stages and mild infections there are characteristically few ova in the feces, and diagnosis by this means is particularly difficult. Serological and skin tests have been developed but as yet are of lesser value. A recently developed procedure that holds great promise is the rectal biopsy technique which has been found of value in Schistosoma mansoni infestation. The procedure was originated by Ottolina and Atencio[9] in 1943 following the demonstration that the highest incidence of schistosomiasis at autopsy was obtained by examining digested tissue from the upper half of the rectum. They applied this to patients by taking biopsies of rectal mucosa from the first (inferior) rectal fold, and found that of 140 cases whose stool examinations were consistently negative for ova, 14 per cent were positive on biopsy. Their procedure consisted of digesting the biopsied tissue fragment with 4 per cent KOH while incubating it at 60 to 80° C. The digested material was then centrifuged and the sediment examined for ova. Rincon-Urdaneta,[10] using the same procedure, found positive rectal biopsies in 42 per cent of 128 cases. Geib, Sher, and Cheney[3] applied this technique to 46 Puerto Rican patients. Thirty-four of these patients had been untreated, and twelve had been treated with 45 c.c. of fuadin one week prior to examination. The relative percentages of positive results by biopsy and stool examinations are listed in the following table:

	No. Cases	*Biopsy*	*Stool*
Untreated	34	50%	29%
Treated	12	67%	8%
Both	46	54%	24%

Hernandez-Morales and Maldonado[4] modified the technique by biopsying the first rectal valve, compressing the piece of tissue between two microscope slides, and examining it under low power. They studied 138 cases of Schistosoma mansoni infection including 50 untreated and 88 treated patients. The results of biopsy were compared with stool examinations by an acid-ether concentration technique and the following relative percentages of positive results were obtained:

	No. Cases	*Biopsy*	*Stool*
Untreated*	50	100%	42%
Treated	88	70%	18%
Both	138	81%	26%

*In two instances stools were not examined, therefore 42 per cent is based on 48 cases, 26 per cent on 136 cases.

In 1947, Ottolina[8] reported on a similar method of direct examination in which the tissue fragment is immersed in fresh tap-water for three to five minutes making it more transparent (by dissolution of hemoglobin) and allowing more adequate visualization of ova when the tissue is compressed between two slides.

To date, no reports have appeared describing the efficacy of rectal biopsy in chronic Schistosoma japonicum infection. It is reasonable to anticipate good results, however, in view of the demonstration that "yellowish nodules" (containing nests of ova) on the mucosal surface of the lower sigmoid and upper rectum are commonly found in the acute stage of schistosomiasis japonica.[2,5] Johnson and Berry[5] found the yellow nodules on sigmoidoscopic examination in 67 per cent of sixty-three patients suffering from acute infections. The nodules were small, firm, 1 to 3 mm. in diameter, and occurred in clusters of three to twenty-five beneath the mucosa. They were most abundant at the rectosigmoid junction, and they extended up into the lower sigmoid and down 4 to 5 cm. in the rectum. Biopsy of these nodules revealed clusters of ova beneath the mucosa. Presumably many of these ova become trapped in the tissues by the proliferative reaction they stimulate.

In the present case, nests of Schistosoma japonicum ova were found surrounded by dense concentric fibrous tissue (pseudo-tubercles) beneath the mucosa in the stained sections, though the entire mucosal surface appeared normal on sigmoidoscopic examination. Biopsies were taken initially from the middle and inferior valves of Houston,

the positive one (of four) coming from the former. Following therapy with tartar emetic biopsies were repeated, specimens being taken from the superior, middle, and inferior valves. The biopsy from the uppermost valve was positive; no organisms were found in the other two. The presence of ova in the upper valves and not in the lower is consistent with the findings in the acute cases in whom the greatest concentration of yellowish nodules was found at the rectosigmoid junction, the numbers decreasing below that point. It seems advisable therefore in the case of Schistosoma japonicum infections to secure the tissue fragment from the upper valves of Houston or the rectosigmoid region, rather than the inferior valve as recommended by Hernandez-Morales and Maldonado in Schistosoma mansoni infections. The particular method of examining the tissue may vary. Direct examination of the compressed unfixed tissue has the advantage of simplicity and enables one to differentiate live from dead ova easily. Stained sections allow more accurate delineation of tissue histology, and minimize the likelihood of overlooking light infections where only few ova are present. This presupposes that the entire fragment is sectioned and examined. A given biopsy specimen may be examined to good advantage by both methods.

Summary

1. A case of chronic Schistosoma japonicum infection, which was first diagnosed by means of punch biopsy of a valve of Houston, is presented.

2. The possible alterations in the time sequence of the pathological changes of schistosomiasis japonica in the American soldier are discussed.

3. The published articles on rectal biopsy in the diagnosis of schistosomiasis are reviewed, and the rationale for its use in chronic Schistosoma japonicum infections is presented.

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OCCUPATIONAL THERAPY COURSE APPROVED

The American Medical Association Council on Medical Education and Hospitals has now approved the University of Minnesota's course in occupational therapy.

Organized in 1946 in the physical medicine department of the medical school under the direction of Miss Borghild Hansen, the course is designed for the training of occupational therapy technicians.

Bachelor of science degrees in occupational therapy were awarded last June to twelve students constituting the first class to complete the course which requires four and one-quarter years of classroom and technical training. Application for approval of the course by the council was made upon the graduation of the first class.

Before the organization of the course in the medical school, a pre-occupational therapy program was offered in the University's college of science, literature and the arts.

At the University of Minnesota Hospitals, the occupational therapy division maintains a clinic for hospital patients and out-patients as well as a bedside occupational therapy service for those unable to come to the clinic. An extensive occupational therapy program is also available to psychiatric patients.

PROTECTIVE VACCINATION AGAINST TUBERCULOSIS, WITH SPECIAL REFERENCE TO BCG VACCINE

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For twenty-five years, BCG (Bacillus Calmette and Guerin) has been widely used to increase resistance to tuberculous infection among population groups in which there is a high incidence of tuberculosis and among persons whose occupation, the care of the tuberculous, increases their danger of contracting the disease.

In spite of its widespread use, BCG has not received universal acceptance due to the fear that the culture is not a virus fixe, as claimed by Calmette, but that it might regain its virulence. The innocuousness of the BCG vaccine for man is proved by the fact that not a single unequivocal case of tuberculosis can be attributed to its use. Since the first results of BCG were reported in 1921, more than ten million people, largely in the Scandinavian, European and South American countries, have received the vaccine as a protection against tuberculosis.

The value of BCG vaccine in increasing resistance to tuberculous reinfection has been investigated under carefully controlled conditions among some Indians of the United States and Alaska, in a study directed through the U. S. Office of Indian Affairs and the Henry Phipps Institute, University of Pennsylvania. Freshly prepared BCG vaccine was administered intracutaneously to 1,551 American Indians ranging in age from less than one year to twenty years and to 123 newborn infants. At the same time 1,457 Indians of comparable age and living under the same conditions received an intracutaneous injection of sterile physiological saline and served as controls. One hundred and thirty-nine newborn infants also served as controls. No untoward local or general reaction followed the injection of the vaccine. In no instance did the regional lymph nodes ulcerate.

The original group of vaccinated and control were followed over a period of from nine to eleven years by means of tuberculin tests and roentgenograms of the chest, while the group of "newborn" infants were similarly followed for from six to eight years. The vaccinated cases were observed for a total of 16,406 person-years and the controls for 15,207 person-years. The mortality rate from all causes was 3.1 per 1,000 person-years of observation for the vaccinated and 7.2 for the controls. Among the 1,551 BCG vaccinated there occurred a total of 55 deaths, including 6 deaths from tuberculosis. Among the 1,457 controls there occurred a total of 109 deaths, including 53 deaths from tuberculosis. The mortality rate from tuberculosis per 1,000 person-years of observation was 0.4 and 3.5 for the vaccinated and controls, respectively.

Among the controls, the death rate from tuberculosis was highest among the males in the fifteen to nineteen and twenty to twenty-four year age group and in the females in the ten to fourteen and fifteen to nineteen age group. It was approximately twice as high among the females as among the males. Among the 123 newborn infants who were vaccinated and observed for from six to eight years, seven have died, none from tuberculosis. Among the 139 newborn controls fifteen have died, four of them from tuberculosis.

The tuberculin reaction became positive one year after vaccination in 19.3 per cent of cases and has remained at approximately the same level throughout the course of this study. Among the controls the tuberculin reaction became positive in 12.7 per cent within one year after the initial negative reaction, and there has been a constant and gradual increase in the percentage of the controls reacting to tuberculin. Roentgenologically demonstrable lesions having the characteristics of primary tuberculosis occurred in twenty-two of the vaccinated and in 120 of the controls. Minimal lesions of reinfection type, progressive lesions and miliary and extrapulmonary lesions of tuberculosis were found in twenty-one of the vaccinated and in ninety-three of the controls.

Abstract of the fourteenth annual John W. Bell Tuberculosis Lecture, delivered before the Hennepin County Medical Society, May 3, 1948.

THE NINE BILLION

The April issue of the *News Letter* carried a short note on the whereabouts of some nine billion in social security funds. The American Bar Association has recently shed a bit of light on this whereabouts. An A. B. A. resolution (American College of Radiology News Letter, June, 1948) reveals "(1) That 99.5 per cent of the funds thus far accumulated under the Act have been spent on public projects, and that special non-negotiable Government obligations have been substituted 'for 86.26 per cent thereof.' (2) That 'such part of such sum as may be necessary to meet extraordinary demands which may arise in the future will of necessity have to be raised by the sale of negotiable bonds or by the imposition of taxes to redeem the non-negotiable obligations.'"—*News Letter,* Council on Medical Service, A.M.A., August 12, 1948.

History of Medicine In Minnesota

NOTES ON MEDICINE IN FREEBORN COUNTY, 1857—1900

ANDREW GULLIXSON, M.D.
Albert Lea, Minnesota

(Continued from November issue.)

Dr. Frank A. Blackmer was born at Amherst, Ohio, January 16, 1846. He came to Freeborn County with his parents in 1856. They located on a part of what is now known as Blackmer's addition to the City of Albert Lea. He aided his father in driving his ox teams from McGregor, Iowa, at that time the terminus of the nearest railroad, across the prairies to their new home. He was then ten years of age. He found plenty of gravel in his diet as a youngster, and continued to find it there up to his early manhood. He began his schooling at Amherst, Ohio, and attended the public schools of the then struggling village of Albert Lea.

At the age of twelve, two years after his arrival here, while working in the fields one day, he came to the conclusion that he would strike out for himself, and hanging his scythe in a tree, he came to town to get work. He did odd jobs and soon accepted a position with the year-old newspaper, *Southern Minnesota Star,* begun in April, 1857. Here he learned to set type. Shortly thereafter, probably in 1859, Dr. A. M. Burnham needed someone to publish his *Freeborn Springs Herald* at Itasca, and secured young Master Blackmer for the position. But Dr. Burnham's hopes and aspirations of Itasca as a county seat failed to materialize, and young Blackmer with his conniving young partner loaded the fonts of type and the hand-press by night and carted them to Blue Earth and founded the *Blue Earth Post,* which continues still to be one of the most influential journals of the state. Dr. Burnham was paid $200 about two years later. He was paid at night, and probably in the dark of the moon.

In 1862, at the age of sixteen, young Blackmer enlisted in Company C, Fifth Minnesota Volunteers Infantry, and with the rank of Orderly Sergeant, was sent with his company to the frontier to protect settlers from threatening Indian outbreaks. On August 22, 1862, his company participated in the battle of Ft. Ripley, and there young Sergeant Blackmer received a severe gun-shot wound involving the face, jaw, and tongue. In consequence of this disability, he was discharged in October of the same year. The ball was removed by Assistant Surgeon A. A. Ames of Minneapolis. This wound, with the resulting scars on his face and tongue, was the cause of much discomfort to him during his life. After his discharge, hospitalization, and convalescence, he went to Chicago and during the winter worked as a compositor on the morning papers. In 1863 he entered the academic department at Oberlin College, Oberlin, Ohio, and sawed wood, set type, and did other work to pay tuition and board. He had already decided to study medicine, and while at Oberlin he spent some time reading medicine in the office of one Dr. Bruce. After his courses at Berlin he became a student at Cleveland Medical College, Cleveland, Ohio. After graduating there in 1868, he returned to Albert Lea, married a Miss Prescott, and became a partner of Dr. Wedge, both in Dr. Wedge's drugstore and in his medical practice. Within a year, Dr. Blackmer's young wife died, and he went to Blue Earth and worked on the paper he had

founded there. Later he went to Jackson, Minnesota, acquired lands, and farmed. But fortunately for Freeborn County, the grasshoppers forced him to discontinue this venture. He returned to Albert Lea October 15, 1872, married Frances E. Wedge, a cousin of Dr. Wedge, and began in earnest a highly successful medical practice that continued until his death July 11, 1900.

Dr. Blackmer had one son, Ray, a daughter, Anna, and four brothers: Heman, a lawyer; Henry and Loren, farmers; and Nelson, who died young. He was a devoted husband and father and a loyal comrade and citizen. He was energetic, ambitious, and generous. He loved his fellow men and none were denied his services when requested. He was particularly kind and helpful to boys and young men.

"Dr. Blackmer was one of the talented, successful physicians and surgeons of the state. As a surgeon, he became eminently adept and modern in his methods. In performing an operation he was seemingly relentless, yet he was at all times sympathetic and gentle as a woman."—*Standard,* July 11, 1900.

"Dr. Blackmer will leave for Washington, D. C., as a delegate to the annual convention of the American Medical Association. This is an honor well deserved and one which the genial doctor will improve in the interests of his noble profession."—*Standard,* April, 1884.

"In driving across the lake, following the course of travel, the ice suddenly broke under Dr. Blackmer's team, with horses and sleigh sinking in about five feet of water. He narrowly escaped by jumping, while his horses went under. Help was obtained and the team was rescued."—*Enterprise,* February, 1884.

The following was told by one of his then youthful friends who later became a dentist:

"Walking with Dr. Blackmer one morning an anxious mother rushed toward them crying, 'Come quick, my daughter is dying!' One look told the story. The doctor pulled out his jackknife, wiped it on his boot, and readily performed the urgently needed tracheotomy. The youth held a spoon in the trachea while the doctor whittled a tube from a spool, inserted it into the trachea, and tied it with a cord around the neck. Results: good."

"Dr. Blackmer took a span of horses on a bad debt. The horses had killed the husband of the woman who owned them, in a runaway last spring, and so he was on guard and watchful in managing them. As soon as they were driven into the street he found that he had underestimated the viciousness of the brutes. They ran fiercely and as he was unable to hold them in a turn, the buggy was hurled with terrible force. The doctor and his companion were severely injured—the doctor now with his leg in a cast, and his companion unconscious."—*Standard,* June, 1893.

"Dr. Blackmer's life was most active. He was a successful business man and financier, and accumulated a handsome fortune."—*Standard,* July 11, 1900.

"Dr. Blackmer's keen interest in medicine and surgery prompted his regular attendance at state and national medical society meetings. He also traveled a good deal and took clinical trips. In November, 1890, together with his wife, he sailed for Europe, and after a short tour of France and Italy, he spent the winter in clinical work in London. He wrote as follows, from London: 'We are attending clinics all the time and do not have time to see anything unless it comes in our way as we pass from one hospital to the other. I have seen more surgery that I can think of. We are observing thirty cases of Koch's treatment. It seems to help in lupus, but in the acute consumption of the lungs is very uncertain. It seems to help some cases of tuberculosis of the joints. I can see that the winter is going to be very busy, but very profitable. There is no end of surgery. I saw nine or ten operations on the eye at Mowesfield hospital in the forenoon, and afternoon saw operations for the radicle cure of hernia at Guy's hospital. After surgery, ward walks reveal all manner of surgical diseases and procedures. We are treated with the greatest cordiality and good fellowship'."—*Standard,* December 16, 1890.

"Dr. Blackmer was one of the best known pioneers of southern Minnesota by reason of his medical attainments and army record. He had not been very well for several years, but not until about a month before his demise, did he go to Chicago for consultation and diagnosis. Dr. J. B. Murphy, among others, agreed that his ailment was deemed to be due to gall stones,

and an operation was declared to be imperatively necessary. He anticipated fatal results, arranged his affairs, and entered Northwestern hospital under Dr. Moore, who operated July 3. He died July 11, 1900. His death was a great loss to the community and to the profession in which he was highly distinguished. A large concourse of old settlers, friends, old soldiers, and members of the medical profession gathered at the funeral, and during that hour, business in Albert Lea was suspended."—*Standard,* July 18, 1900.

J. F. Kelsey appeared April 20, 1865, with the following card:

"Go tell the world these blessed things; yes, be sure your patrons hear, that henceforth I enter my name with the laity of Freeborn County to labor in the field of true medical science, embodied in the various departments of natural, economical, and metaphysical science, to the elucidation, prevention, and cure of diseases, which is, in fact, the highest development applied to the noblest temporal objects, namely: the prevention and alleviation of human suffering and the prolongation of human life. Hence, I offer my services to the people of this vicinity who are so unfortunate as to be afflicted with disease, as an intelligent and efficient helper and guide of nature, in regaining their natural standard of action, or what we call health. Their patronage is solicited. Truly, J. F. Kelsey, M.D."—*Standard,* 1865.

This colorful card appeared only a few times and is the only contact found. Where and when that insatiable enemy of immortality caught up with him is not known.

Dr. William Henry Smith, a physician for nearly forty years, and an army surgeon, was born in Denmark, Lewis County, New York, March 9, 1815. His parents, Selah and Catherine (Tisdale) Smith, were classed among the agriculturalists, the father being one of the first settlers in that part of the Black River country, and died when William was thirteen years old. From that date the son took care of himself. He was educated at common and select schools, taught six winter terms, beginning at the age of nineteen and receiving eight dollars a month and board, for the first season. The rest of the time he worked on farms and attended select schools. At the age of twenty-four he commenced reading medicine with Dr. Elkanes French, of his native town, and attended the last course of lectures held at Fairfield, Herkimer County, before the medical college was moved to Geneva. He received from the authorities of Jefferson County a certificate permitting him to practice, which he did for four years at Pamelia, Four Corners, in that county.

In 1846 he moved to Beaver Dam, Wisconsin, and practiced there for twenty years, except when in the army. In 1856, he attended a course of lectures at Rush Medical College, Chicago, from which he received his diploma. In 1862 Dr. Smith went south as surgeon of a Wisconsin artillery regiment. At the end of one year, he was transferred to the same position in the twenty-eighth Wisconsin Infantry and served three more years. During nine months of this time he was post surgeon at Pine Bluff, Arkansas. He was a very patient man and was very attentive to the wants of the sick and wounded. While in the South he contracted a disease from which he suffered more or less for a long time; and in 1866, thinking a change of climate might be beneficial, he went to Fulton, Missouri, practicing when he had sufficient strength.

In 1873, much improved, he returned to the North and settled at Albert Lea. Here he had a good practice and an excellent standing and held the office of county coroner. When at Beaver Dam during the administrations of Presidents Taylor and Fillmore, he held the office of postmaster. A Whig in early life, with Free-soil tendencies, he naturally drifted into the Republican ranks, where he is still found. For the last twenty-five years he has paid very little attention to politics except to vote. His leisure time is given mainly to medical studies.

On February 22, 1843, he was married to Miss Louisa M. Stevens of West Mar-

ginsburg, Lewis County, New York. They had three children. A son, Selah H., was accidentally killed on the railroad at Cherokee, Kansas, in January, 1874. Mary is the wife of Jasper J. Bond of Albert Lea; Frances E. and Charles Henry also both reside at Albert Lea. (*Freeborn County History,* 1882).

"Dr. Smith has resigned his office as coroner of Freeborn County, and his many friends will regret to learn that he has decided to remove from here. He will go to Wentworth, Dakota Territory, where his son resides and where he has valuable farms. He will also practice his profession there and undoubtedly will do well, for he is a physician of superior abilities and judgment, and will carry with him the high repute which he bares in all regards."—*Standard,* August 5, 1885.

Dr. George E. Moon practiced at Geneva a short time in 1869. Together with Dr. F. A. Blackmer and Dr. E. S. Gibbs, he read medicine with Dr. A. C. Wedge in 1867. He attended Cleveland Medical College and was a graduate physician and surgeon from there in 1869. After his short stay at Geneva he moved to Yankton, Dakota Territory. He made many friends there and was considered one of the best physicians and surgeons in Dakota Territory. "Consequently the town was considerably excited one evening in January, 1884, when he announced to his wife that he had deliberately taken a large dose of morphine, but was not going to die with his boots on. He began to pull them off and told his wife to get him a clean shirt. A physician was called, but he died the next day."

Charles W. Ballard was born in New York City in January, 1826. He attended boarding schools in New York and New Jersey. In 1847 he began the study of medicine at Washington Medical University of Baltimore and the College of Dental Surgery there and in 1850 graduated from both institutions. He married Miss Anna E. Harris the same year.

He was a member of the state senate for two terms, taking a decided stand against slavery. He then located in North Carolina and practiced his profession there for ten years, after which he returned to New York and Connecticut, where he engaged in business. In 1868 he went to Florida for his health, remaining there for two years. In 1870 he came to Freeborn County and purchased lands within and near the borders of Albert Lea. His interests were entirely in real estate, horticulture, travel, and writing his observations. He was a well-educated gentleman of good judgment and much wisdom and an outstanding citizen, benefactor, and friend. He did not practice his professions at any time in Albert Lea. Later in life he returned to Sarasota, Florida, where he died.

Dr. Tilly Peabody was an herb doctor, not a medical graduate. He came to Freeborn County in the early days, probably in the late 1860's. Records show that in 1875, he homesteaded on the southeast quarter of section thirty-five, Alden Township. He practiced in the southwestern part of this county and the adjoining Winnebago County in Iowa. Nothing concerning him is found in the newspapers or pioneer histories. Rumors had it that he was a scion of a prominent family in the East and that a wealthy sister made trips to this section, endeavoring to have him return. Two old people, now past the age of ninety years, remember him as "a kind doctor who did a lot of good." They tell that, with his wife, he would roam the Bear Lake woods, collecting in season the various roots, herbs, and leaves from which he made his own medicines, salves, and plasters. He traveled on horseback. Perhaps it was he of whom a pioneer Iowa doctor related the following incident to the writer over forty years ago.

"The doctor, when answering a call found his patient suffering from urinary retention, and not having the necessary catheters in his meager saddlebags, cut a suitable stem from a castor-bean stock, scraped it down to its well lubricated smoothness with his jack-knife and relieved his patient successfully."

His wife evidently died, as his last known abode was in a dugout shared with a Norwegian family in Winnebago County, Iowa. The only son of that family, now an old man, resides at Lake Mills, Iowa, and is known as Peabody Nels. Dr. Peabody died in 1887 and was buried in Bear Lake Cemetery.

Dr. E. M. Gibbs was born at Rome, Bradford County, Pennsylvania, in 1847. His father and family were early pioneer residents of Freeborn County, located at Geneva. He attended schools at Albert Lea, and in 1867, together with Dr. F. Blackmer and George E. Moon, read medicine with Dr. A. C. Wedge. In the spring of 1869, he graduated from Cleveland Medical College and later the same year announced the beginning of practice at Geneva. "He brings into the profession the benefits of his careful reading and exemplary habits."—*Standard,* 1869. He practiced at Geneva only one year and then moved to Monticello, Minnesota, where he was in active practice for many years until he died from a cerebral hemorrhage in 1922 at the age of 75. He was buried in the family plot at Geneva.

Dr. Alvin H. Street was born in Orange County, New York, in April, 1833. He was one of two sons born to Chapin and Dolly (Ness) Street. His mother died in New York. His father, a school teacher and a large landholder, was an imposing aristocrat, who later moved with his family to Hebron, Illinois, where he acquired large land holdings and resided until his death.

Dr. Street attended the academies at Albion and Kerryville, Illinois. He subsequently graduated in both medicine and dentistry in his native state and practiced there until he was thirty-six years of age, when he decided to try his fortune in Minnesota. He located at Albert Lea in 1869, paying most attention to medical practice but keeping a hand in dentistry at all times. He disliked the trials and hardship of pioneer medical practice and in 1876 returned to New York for postgraduate work in dentistry. He returned with equipment for making dentures, introduced "laughing gas" for use in extractions, and no doubt was well qualified to do creditable work in that field. But his interests gradually shifted elsewhere. He became neglectful of his office and his appointments and gradually faded out of both of his professions. He never married. He died at the home of his niece at Alden in 1914 and was buried in the family lot at Hebron, Illinois.—*Freeborn County History,* 1911.

Dr. Street was an odd and eccentric man and held no appeal for the ladies. He was a vegetarian and always carried crackers and nuts in his pockets. He was scrupulously clean but dressed in shoddy clothes. He would walk out to his nearby farms, and in season would remove his foot wear in order to walk in the mud. Also in season he would take to the deep clover fields, disrobe, and take sunbaths. He became interested in agriculture and spent the winter of 1890 at the agricultural college. His library was filled with books and pamphlets on the subject.

Dr. Street was an honorable, upright, honest gentleman. He had a keen sense of values. He bought and sold lands and town properties, loaned money, and became quite wealthy. He was a boyhood schoolmate of the great Pullman, in Orange County, New York. He called himself a paroled Methodist, having acquired that status by attending a dance at the age of fourteen. He never returned to the fold but gave generously to the church, besides making a gift of $10,000 to the Albert Lea Ladies' College. If any notice appeared in the newspapers about his gifts, he

would immediately cancel them. After the year 1900 he lived with his tenant on his farm near Alden. He then began to travel a great deal. He made frequent trips to New York and to Arizona for his health. He owned a fine store building on Albert Lea's broadway, but when he died the executors of his will could not for some time find his safe containing his deeds and papers. Later it was found in a dingy corner on the upper floor of a nearby building. He may not have contributed much to pioneer medicine but he was an honest, honorable friend and citizen.

Dr. John H. Froshaug located at Albert Lea in 1871 and practiced here until 1877. Nothing can be found concerning his birthplace, early education, or medical training. He was evidently of Scandinavian parentage. He was well regarded, as the following news item indicates:

"Dr. John Froshaug had a lot of friends in town that would have been glad to have seen him retain his office, a small one which he owned and was furnished with all modern equipment, including a mortgage. Money, the root of all evil, was used to root him out; and a man on an independent ticket, with plenty of money, sold him out."—*Enterprise,* 1876.

"Dr. Froshaug associated with Dr. Blackmer in the drug business, drugs, chemicals, and patent medicines."—*Enterprise,* May 18, 1876.

In July, 1877, he moved to Lake Park, Becker County, and in 1879 was a delegate to the Republican State Convention from that county. Later he moved to Twin Valley and died there June 20, 1889.

R. D. Barber.—The following account is given of one R. D. Barber:

"At an early day (1871), a man named R. D. Barber, calling himself a doctor, located in the village of Alden and commenced 'peddling pills.' He remained less than a year, as he was unpopular, and then left, locating at some point in the southwestern part of the state, where he again made himself odious by transporting a brother (who, he insisted, was crazy) to an insane asylum and then charged an enormous bill for his services. The bill was paid but gave him the reputation he deserves. His whereabouts at present is a mystery, to the satisfaction of all who knew him."—*Freeborn County History,* 1882.

Dr. Sylvester S. Bedal was born at Kensington, Canada, September 10, 1847. Nothing is known of where he received his early education, but evidently it was classical and extensive. When he went to Chicago is not known, but he was for three years a student at the Chicago Medical College, including 1871, at the time of the great fire there. He received his M.D. degree from this college and located at Albert Lea, May 30, 1872. He practiced here until September, 1874, about two and a half years. A very modest card appeared in the newspaper announcing "S. S. Bedal, Physician and Surgeon. Office over The Red Drug Store." No one now living here remembers him. Except for the newspaper files containing reprints of three letters received from him in 1874, this young pioneer physician, apparently a "gem of purest ray," would have been lost to our record.

Under appointment from the State of Minnesota as a candidate for Assistant Surgeon in the United States Army, he went to New York City, passed the examinations, and served from September 17, 1874, until his discharge in 1877. Information as to his place of birth and death, his medical education and place of graduation, together with data on his army service, came from the files of the Adjutant General's office. He must have been a quiet, unassuming, well qualified physician and surgeon and, too, a gracious, gallant, and lovable character.

In his letter dated August 23, 1874, he speaks of a day and night of jolting on the train that brought him to Chicago and remarks about the wonderful progress

in rebuilding after the fire. Then two nights and a day brought him to New York City. He writes:

"I am visiting places of interest every day but more especially such as interest me professionally, as the prisons, hospitals, and asylums on Blackwell and Ward islands, and public libraries, museums of anatomy, medical colleges, et cetera, and find them to be excellent sources of instruction."

In a letter dated September 24, 1874, in which he speaks about his examinations before the army medical board, he says:

"The manner of conducting examinations gave me a high opinion of the professional ability of the medical corps of the United States Army. The recorder conducted me to a private room and caused me to certify on my honor as to my age and my mental and physical condition. Being ushered into the examining room of the full board, consisting of five officers, uniformed in cavalry rig, I was politely invited to occupy a vacant chair in the circle and was addressed by one, somewhat after the following manner: 'Doctor, how long have you been in practice?' 'In what part of Minnesota have you lived?' 'Is that much farther north than New York?' I gave the latitude of both places. 'How low have you known the mercury to be there?' 'Why is mercury used in constructing a thermometer?' 'Explain the principle of contraction.' I answered these successive questions to the best of my ability, alluding to the contraction and expansion of bodies by cold and heat. 'What do you call the process of ascertaining the relative densities of bodies?' 'How would you find the specific gravity of bodies lighter than water?' 'And of liquids?' This manner of asking questions continued until I was taken through natural philosophy, mathematics to logarithms, and the Latin language. The next examination commenced with ancient Greeks, Persians, Babylonians; and they asked me questions up to the present time, English composition, and geography. My preliminary examination was completed by a fifth member of the board, asking me concerning zoology, spectrum analysis, and of scientific expeditions to observe the transit of Venus, of the knowledge they expected to gain and the instruments used. To say that I answered all the questions correctly would be presuming too much. The recorder said that I did finely.

"After this followed the regular surgical and medical examination, which was rigid. It was partly written and partly oral and was conducted with a view to finding out what a candidate does not know.

"It is impossible for a candidate to pass a successful examination unless he is considerably better than the average medical student. My examination closed today, and I was told results were satisfactory."

According to the Adjutant General's records, he died at Eagle Pass, Texas, November 17, 1888, aged forty-one.

Dr. D. C. Rowland came to Twin Lakes, Freeborn County, early in the summer of 1872, where he soon established the reputation of being a competent, honorable, and able physician. A card dated July, 1872, says:

"I will treat all diseases to the best of my ability. Have made a special study of diseases of women and children and chronic diseases of long standing. By long experience and strict attention to my profession, I am confident of treating all curable diseases with success. Obstetrical cases treated with care and success."—*Standard,* July, 1872.

"From July 11 to October 29, 1872, he rode twenty-two hundred miles." (*Standard,* November, 1872). This no doubt was on horseback, as in those days trails were few and for the most part impassable for horse-drawn vehicles. If destinations led where passage was impossible for horse and rider, they could both take a little roundabout walk, which no doubt often happened.

Dr. Rowland was an eclectic physician and "in October, 1875, he left for Cincinnati, Ohio, where he attended a course of lectures in that school." (*Standard,* October, 1875).

"Dr. Rowland, who has been home visiting his folks at Battle Creek, Iowa, is making preparations to move his office to that place. Dr. Rowland is a good physician and it is to be regretted that he does not find it to his interests to remain here."—*Enterprise,* January 31, 1884.

He left Twin Lakes in 1884 and located at Sioux City, Iowa. After retiring, he went to Red Bluff, California, where he died.

Dr. M. M. Dodge was born at New Lime, Ashtabula County, Ohio, Oct. 28, 1842, and at the age of fifteen began teaching school. In 1859 he studied medicine with Dr. Porter Key in his native town, and in 1861 entered the Cincinnati Hospital. In the winter of 1863-1864, he attended lectures at Ann Arbor, Michigan. The following spring he moved to Wisconsin, immediately enlisted in the Fortieth Wisconsin Volunteer Infantry, Company D, and was detached as assistant surgeon in the Adams Hospital, upon the regiment's arrival in Memphis. After the close of the war, he located in Chicago; and after the fire in October, 1871, having been burned out, he attended lectures at the Hahnemann Medical College, from which he graduated February 22, 1872. The same year he married Miss Lucy Norton and moved to Lone Rock, Wisconsin. In the spring of 1874 they came to Albert Lea, where Dr. Dodge established an extensive practice. In his newspaper card he announced himself as "College read, of long experience and a homeopath, and therefore would not be materially in competition with the other schools of practice."—*Freeborn County History,* 1880.

The following is a dictation taken during an interview with an old personal friend:

"Dr. Dodge, besides being a successful practitioner, had a colorful personality. He was always well dressed, shoes shined, generally wore kid gloves, and was very neat in his appearance. He was a lover of good horses. I recall a fine bay team of his, well matched, always carefully cleaned, groomed, and well harnessed, hitched to a clean good looking carriage. Sometimes when he received a call, he would come out of his office in a dignified manner, get into his carriage, give the horses the proper signal, and start away in a whirl of speed and dust as though going to a fire. Passers-by were sure to think that something very serious had happened and that the doctor's presence was urgently required. Other doctors might intimate that he might not have any call at all, and was only putting on a little show; but in any event, all knew the doctor was on his way.

"Dr. Dodge was of the generation that believed that whiskey might, on occasion, be used as a beverage. Now and then he would over-indulge, tell some one what he candidly thought about him, and sometimes find himself in justice court charged with assault. He would be fined the customary amount, pay it, and then arise in a Chesterfieldian manner, compliment the justice on his careful observance of the law, apologize to him for causing him any trouble, apologize to the victim, and then make a dignified exit. Apparently those episodes had very little effect on the volume of his practice. . . . I recall a well known citizen of Albert Lea being indisposed and in bed. His wife diagnosed his illness as heart trouble. She got word to Dr. Dodge to come in a hurry. When he arrived, she met him at the door and in a very agitated manner urged him to 'Hurry! hurry! Tom is very ill.' 'What seems to be the matter?' asked the doctor. 'Oh, it is his heart, his heart!' 'Rule that out,' the doctor replied. 'That is impossible; that —*—* fool hasn't any heart.'"

Dr. Dodge spent the winter of 1888-1889 in Chicago, specializing in gynecology. In 1890 he moved to Tacoma, Washington.

Dr. Willis H. Twiford came to Freeborn County and settled in the village of Geneva in 1873. He built a fine home in 1875 and owned adjacent land, which he farmed and on which he later platted a fine addition to the village. He was a kindly gentleman, a very solid general practitioner, and one true to his trust. He was born

May 12, 1821, in Fayette County, Ohio. His mother died when he was seven years old and left a family of ten children. In early life he improved all opportunities offered him for obtaining an education. He attended the academy at Delaware, Ohio, for two terms and later entered the office of Dr. Stanley Skinner, Jr., with whom he read and practiced. He studied medicine for three full years and graduated with the degree of M.D. at the Starling Medical College of Columbus, Ohio, in 1845. In April, 1846, he married Miss Nancy R. Darling, daughter of Jeremiah Darling, Esq., of Madison County, Ohio.

Dr. Twiford practiced for a time at Plain City, Ohio, until August, 1853, when he removed to Union City, Indiana, and remained there until the war in 1861. He joined the Twenty-fifth Indiana Regiment as assistant surgeon and was soon commissioned surgeon. He was in charge of the hospital on the field at the battle of Antietam. He was later appointed by General Hooker as Surgeon-in-Chief of the First Division of the Twelfth Army Corps. He held this commission until July, 1864, when he resigned in consequence of an injury to his spine that resulted in partial paralysis. He came to Minnesota in 1864 and first settled at River Point, in Steele County. Here he was elected to the ninth legislative session of the state in 1866. Dr. Twiford was a Republican and active in politics. He became interested in the projected Duluth and Mankato Railroad, which gave promise of including the village of Geneva, and for several years he was a member of its board of directors. This venture, however, never materialized. After practicing medicine for fifty years, he sold his practice in 1895 and retired and moved to Owatonna, where he died in 1902 at the age of eighty-one.

Dr. W. D. Cole located at Albert Lea in 1873. In his newspaper card he advertised that he was an eclectic physician, a veterinary surgeon, and a druggist.

"Go to Cole's drugstore, where you can buy pure drugs and medicines. Do not ruin your chances of recovery by being drugged with mercurial preparations under the old system, but adopt the only scientific system—the Eclectic. Chronic diseases of long standing a specialty. Consultation free."

In 1879 he moved to Mankato, and in 1883 went to Olmsted County. He was addicted to "the liquid havoc of the oaken stave, and warmed with its deviltry, was arrested and heavily fined for assault in Rochester in November, 1883." (*Enterprise,* November, 1883). He died at Alden and was buried at La Crosse, Wisconsin.

Dr. F. J. Benham, a graduate of the State University of Iowa Medical College, located at Alden in 1873. He came from Cascade, Iowa, and evidently was a well-qualified physician. "He practiced for a while at Alden and the next year returned to Iowa. In December, 1880, he and his wife were lost with the steamer Alpena, which foundered in a storm on Lake Michigan."

(To be continued in the January issue.)

President's Letter

OUR CHALLENGE OF PERSONAL RESPONSIBILITY

The end of the year is a traditional and appropriate time to reflect upon some of the accomplishments which have taken place in your State Association during the past twelve months. I shall touch on these matters only briefly, however, because I believe it is even more important at this time to look knowingly at the problems ahead, to acknowledge frankly and realistically the shortcomings which still beset us, and to determine not only to keep on stating our case but to back up such statements with the kind of day-to-day performance that clearly associates our services with the public interest.

It has been the aim of our Association this year to expand its health education program. I believe the Association has made substantial progress in this direction. And I emphasize again that the credit for this belongs to you as individuals, because good public relations are the cumulative result of sound thinking and conduct by our individual membership. We have attempted to be realistic in our approach to this problem. Information has been sent from the state office to each individual practicing physician; the local county medical society has been encouraged to realize its importance as a fundamental bulwark in our relations with the public; and other medical organizations, including the Woman's Auxiliary, have been familiarized with our objectives.

We can count these definite results: I believe that every member is better informed and realizes the necessity for keeping informed more than ever before. (I am referring not alone to technical medical information, but also to information which helps the medical man have a greater awareness of the current relationship of himself and his profession to the community.) A new interest is evident in the county medical societies, and only a continued improvement in attendance in these society meetings is necessary to further heighten their effectiveness. The Woman's Auxiliary, together with the Public Health Department of the state, has done a magnificent piece of work in "Health Days." The Governor of the state has been most co-operative in all of our activities.

That we have just begun to scratch the surface on many of these activities I am sure most of you will readily acknowledge. Under the leadership of our very capable incoming president there is no question that the approaching year will see even greater efforts along these and other lines. To my way of thinking—and without reasserting all of our specific public relations problems which I have touched on in recent months—one primary question holds the key to whether our Association and private medicine in general will move ahead or retrogress during 1949 (we cannot, of course, stand still). It is this:

Are you prepared and willing to exercise the deed and vigorous individual responsibility which these times call for from medical men?

It is regrettable that some well-meaning persons within the ranks of medicine still refuse to acknowledge that we present-day medical men have fallen heir to peculiar problems or that our profession faces something of a crossroads. These individuals can only be compared with the proverbial ostrich seeking solace from reality by placing his head in the sand. Medicine won a high professional standing through diligent, intellgent work, and more of the same will be required.

The individual responsibility which we exercise in accomplishing this, in turn, will avail us of added resources of courage to do a better job, for courage stems from a rightness and a knowledge that the job you do is successfully meeting every challenge of the new era in which we live. Your Association solicits your continued and wholehearted cooperation, and here, as possibly at no time in the past, you will in turn find the value of our organization from a local, state and national level.



President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

PROVISION OF MEDICAL CARE

THE SURPRISING and, to some people, stunning victory of the Democratic Party suggests that renewed efforts will be made to establish some form of compulsory federal sickness insurance resembling the various Murray-Wagner-Dingell Bills submitted to Congress in recent years. Inasmuch as President Truman has given his approval to these bills on previous occasions, there is no reason to think he has changed his philosophy on this subject. Whether he will be able to persuade Congress that State Medicine will be to the benefit of the people is another matter. If we, as physicians, are convinced that placing our profession in the employ of the government will lead to an inferior type of medical care for American citizens, it will behoove us to tell our Representatives in Congress our convictions and to persuade others who are leaders in the community to do likewise.

That medical care is costly, everyone will admit. So is everything else. The doctor's bill is but one cost item and in many cases, compared with the hospital and nursing cost, is a smaller item. Widespread hospital insurance helps to care for the mounting cost of hospitalization, but its benefits and of necessity its rates should be increased to afford more needed protection. Voluntary medical insurance is growing fully as rapidly as was the case with hospital insurance, and the State Medical Associations' insurance, the so-called Blue Shield Plan, provides satisfactory coverage for the low income groups. Every effort should be made to increase their scope. It is true that both the Blue Cross and Blue Shield plans do not include the indigent, but neither do the proposed compulsory federal sickness insurance bills in which wage deduction provides services for only those employed and their families.

It is not difficult to imagine what the practice of medicine would be if anyone could have the services of a physician without cost to the individual. What a heyday it would be for the hypochondriac and what a headache for the profession! The volume of medical work would greatly increase, and the opportunity would arise, depending on the plan adopted, for either needless calls from the doctor or slipshod medical attention. The present incentives for self betterment stimulated by private practice would be largely eliminated, and mediocrity and inefficiency in medical practice would be favored. We venture to predict that the better doctors in private practice would not participate in State Medicine.

We have called attention before to the prospect of medical care being provided for a large and larger segment of our population—the veterans. The Veterans Administration has authority to build an *adequate* number of hospitals. The present plan is to provide 300,000 beds at a cost upwards of one billion dollars. The Bureau now has more beds than it can staff with doctors and nurses. Veterans who declare themselves financially unable to procure adequate medical care are admitted to the Veterans Hospitals for non-service-connected disabilities, and according to reports from the Veterans Administration more than three-fourths of their hospital beds are occupied by veterans with non-service-connected medical and surgical conditions. It is obvious that the law is not strictly enforced as to indigency. If the veterans in the future demand medical care for their families on the same basis that they themselves are receiving it, only the lack of doctors and nurses to man the hospitals is likely to prevent an extension of tax-supported medical care to an additional thirty million or more of our people. The Veterans hospital building plan, it is said, is running into unexpected and undesirable competition with the hospital building program of the Hill-Burton Act. In some instances, the two construction plans are operating in the same community. We can see the danger of the Veterans Administration being left with large hospitals, unoccupied, because of lack of personnel. We have a faint recollection of a large orthopedic hospital having been built by the Veterans Administration, after World War I, somewhere in

the southwestern desert, which had to be abandoned because there was no orthopedist available. A hospital, without doctors and nurses, irrespective of its location, is useless.

FUTURE DEFENSE OF MEDICAL PRACTICE

SINCE November 2, many inquiries have come from over the State as to the future plans of the National Physicians Committee.

The doctors of Minnesota have responded most generously to the support of the NPC during the past year, donating more than in any previous year. With very little solicitation they have donated more than $15,000.00.

Since November 2, we have all been somewhat stunned. We are not quite sure what we can do to head off political control of medicine. As Congressman Harness has shown, the present administration has spent more than $70 million and employed 3,000 government employes to convince the public that they want compulsory health insurance.

Ewing's ten-year program for the political control of medicine is something that should make every practitioner of medicine stop to think just what we can do for the protection of the profession. We must admit this report of Ewing's is very cleverly camouflaged. He has painted a very clever picture of the future of medicine under his plan. One who has not followed the development of this plan is very likely to overlook the evils which he has purposely failed to mention.

Many doctors still feel that the American Medical Association should be capable of forestalling such a disaster as this plan would institute. It is very plainly impossible for a scientific body, such as the AMA, to meet the trickery and political maneuvers of the politicians who are promoting this plan.

Just how much the NPC will be able to accomplish in our behalf is impossible for any one to say.

The officers and Board of Trustees of the AMA feel that the NPC is at least an important factor in combating the false propaganda that these politicians are endeavoring to present to the public. We are assured that the NPC will not do anything that does not meet with the approval of the AMA.

J. M. H.

CHRISTMAS SEALS

IT IS mainly to the laboratory research work that we must look for the solution of many of the yet unsolved problems of tuberculosis, and for advancement in our methods of prevention and treatment."

This statement made in 1904 by Edward Livingston Trudeau, first president of the National Tuberculosis Association, is still true, as is shown by the emphasis placed today on research work.

The National Tuberculosis Association, in the present Christmas Seal sale, is making a plea for increased funds needed for research work.

Five per cent of the funds raised goes to the National Tuberculosis Association for its research and other work, while 95 per cent remains in Minnesota to finance specific activities in each county and the state-wide program.

In connection with the present Christmas Seal campaign, it is interesting to trace some of the developments through research in the field of tuberculosis.

The discovery of the tubercle bacillus by Robert Koch in 1882 was the first blow at the deadly enemy. By proving that this bacillus was the cause of tuberculosis, Koch revealed that tuberculosis was a communicable disease which could be prevented.

A few years later the discovery of the x-ray by the physicist, William Conrad Roentgen, led to the development of the photofluorographic units which have been of inestimable aid to the physician in diagnosing tuberculosis.

In our own day, the discovery of streptomycin by Selman A. Wakman has encouraged scientists in the belief that a specific drug for tuberculosis may be found.

Despite this progress, tuberculosis still presents many baffling problems to the scientist. One of the most pressing questions at present is: What are the elements essential to the life of the tubercle bacillus?

Professor Rudolph J. Anderson of Yale University, who is making a chemical analysis of the tubercle bacillus, under a grant from the National Tuberculosis Association, was awarded the 1948 Trudeau medal by the National Tuberculosis Association in recognition of his work.

In a recent article in the *Bulletin* of the National Tuberculosis Association, Corwin Hinshaw, M.D., president of the American Trudeau So-

ciety, summarized the present-day knowledge as follows:

"Of the antibacterial drugs in tuberculosis, streptomycin is the only sufficiently tested and adequately effective preparation that can be recommended. It was not the first chemical remedy to be developed and I do not believe that it is the ultimate drug despite its pre-eminence at this time. New drugs must be tested exhaustively in the laboratory.

"Progress may be slow because there is a great gap between the guinea pig and the patient with tuberculosis; however, the gap between the culture tube and the experimentally infected guinea pig is still broader. To traverse these barriers will entail vast expenditures of patience, energy and money. We must recruit more scientists, technicians and dollars to engage in this worthy cause.

"There has never been a time when the word "control" of tuberculosis could be defined so precisely; when your job and mine were so clearly evident. We now think of tuberculosis in terms of persons; how to persuade them to make use of new and available diagnostic facilities, how to give them the benefit of the new advances in surgery and drugs.

"We are engaged in a struggle against an enemy, nothing abstract or intangible, but a living, growing, breathing being. The size of this enemy is microscopic, but numerally this bacillus is a very great enemy, clever and sinister in his attack. Great battles are being won against this enemy, but our efforts must be through direct methods to find where our enemy is and how to attack him directly when found. Now we seek and find this enemy by health education and mass radiography. We attack him with greatly improved weapons of therapy.

"The inspired leadership of voluntary organizations was never needed more acutely than it is now."

THE KENNY INSTITUTE

The Kenny Institute, founded in December, 1942, at the Lymanhurst hospital building in Minneapolis for the care of poliomyelitis patients has been the subject of controversy in medical as well as lay circles.

With the appointment of Dr. E. J. Huenekens, a well-known pediatrician of Minneapolis as chief of staff of the Institute last August; the addition of Dr. Miland E. Knapp as chief of physical medicine in charge of treatment and training of physiotherapists; also of Dr. John F. Pohl as consulting orthopedic surgeon, Dr. S. R. Seljeskog, and others, the Institute is assured of first-class professional supervision.

Sister Kenny, after whom the Institute is named and whose contribution to the treatment of poliomyelitis is recognized, will remain active with the Institute.

Sister Kenny recently made the following statement which appeared in the press:

"The Kenny institute is now under the direct supervision of members of the three departments of medicine—that is, pediatrics, physical medicine and orthopedics.

"These gentlemen have honored me by asking me to remain as consultant and teacher. This is a goal I have been working years for and at last achieved.

"I quite agree with the procedures of members of the medical profession for their caution in not embracing new ideas that may from time to time be presented, including my own, until they are satisfied they are effective. That is wisdom, and proves the public can confidently put their trust in their activities."

Dr. E. J. Huenekens adds the following comment:

"As background to the above statement of Sister Kenny, I wish to say that three months ago I accepted the position of Chief of Staff of the Kenny Institute because I firmly believe in the value of her treatment. There were two conditions to my acceptance: first, that I be given full responsibility for the medical direction of the hospital; and, second, that Dr. Miland E. Knapp have complete charge of the physical medicine aspects of the treatment with sole authority over the technicians, as he now has at the University Hospital and Sheltering Arms. These conditions have been fully met.

"A further reason for my taking over was to establish such relations with the University that the facilities of the Institute would be open to its staff for research and evaluation of the treatment. We are now in the process of working this out.

"Most important of all, we hope to do away with the antagonism that exists between Sister Kenny and the medical profession, which has caused both to be misunderstood by the public. If these misunderstandings can be resolved, physicians will be able to judge the Kenny method objectively; and, to that end, they will be welcomed at the Institute in the future to observe for themselves the treatment and its results."

SELECTIVE SERVICE AND THE MEDICAL PROFESSION

The induction into the Army of draftees began in October, 1948. The method differs from former procedures in that now the men are given their pre-induction examinations, not at Army installations but at their nearest Army or Air Force Recruiting Main Stations by civilian physicians. These stations are located at Bemidji, Duluth, Mankato, Minneapolis, St. Cloud, Willmar, and Winona.

The pre-induction examination consists of a mental test and a physical examination.

The mental test is an intelligence test and requires a rating of 70 or over for acceptance. From past Army experience with this test, 19 per cent have failed to pass, 19 per cent rated 70 to 89, 30 per cent 90 to 109, 26 per cent 110 to 129, and 6 per cent 130 up. From the Army's experience those rating 90 to 109 furnish the best soldier material. From those rating above 110 the Army selects those who qualify as leaders to be non-commissioned officers and its officer material.

The physical examination is designed to determine the individual's functional ability to perform military duty. This includes a test of his physical stamina, strength in arms and legs, hearing, vision, and neuropsychiatric make-up. He must pass all parts of the physical examination. Serology and chest x-ray examinations are also done.

The examinations are made by civilian doctors with

(Continued on Page 1359)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

"ELECTION" IS THE WORD—WHAT IS THE TRANSLATION?

The people have spoken, in the way that a democracy speaks—by ballot. The word they've spoken is Truman, but what the word means, what are the nuances, the implications, the final result for medicine is yet to be seen. Fortunately, democracy is a game where everybody plays; nobody sits on the bench except by choice. Let's see to it that medicine has a strong team so that the final score will be in favor of private enterprise.

NORTH CENTRAL CONFERENCE STUDIES VARIETY OF PROBLEMS

Nearly 100 physicians from the six-state north central area exchanged information and opinions November 7, at the Hotel Radisson, on problems of mutual concern—the national program of Blue Cross and Blue Shield, Co-operatives and the practice of medicine, medicine in the next medical emergency, standards for prepaid medical care, the nursing shortage, the general practitioner and expansion of State Association programs.

The session, annual for the North Central Medical Conference, began with an address by A. W. Adson of Rochester, president of the conference. First of the discussion groups was that of Blue Cross and Blue Shield, led by James R. McVay, Kansas City, Missouri, chairman of the AMA's Council on Medical Service. Discussants were F. L. Feierabend, Kansas City, Missouri, and H. R. Brown, Watertown, South Dakota. Much interest and participation from the floor was provoked by the question of the proposed Blue Cross-Blue Shield association and formation of a national insurance company. Later, the Conference went on record as (1) approving a proposed resolution which would require that all Blue Shield Commissioners be practicing physicians and (2) commending the Council on Medical Service and the Board of Trustees of the American Medical association on their studies and analyses of the two Blue Cross-Blue Shield plans of action.

Mr. Crownhart, Madison, Wisconsin, secretary of the State Medical Society of Wisconsin, forecast six basic problems resulting from the impact of corporations on medical practices: "Are the services for the covered person going to be available when needed? Is there assurance that such ancillary procedures as are made available will measure up to the proper public health standards? Is the medical and surgical judgment of the attending physician unshackled? Will the plan make available properly qualified physicians for the services promised? If hospitalization benefits are included, are they adequate and within proper levels? Is quality maintained through free choice?"

Discussants in this section were W. A. Wright of Williston, North Dakota, and R. F. Erickson of Minneapolis.

Dinner was served in the Italian room and followed by two brief addresses: Gunnar Gunderson, LaCrosse, Wisconsin, outlined responsibilities of the American Medical association Board of Trustees, of which he is a member; and Thomas A. Hendricks, Chicago, Illinois, secretary of the AMA Council on Medical Service, listed "ten commandments for prepaid medical care," voicing his belief that the "quantity and quality" of medical services would be less, the cost "tremendously" more in any form of socialized medicine.

Howard K. Gray, Rochester, member of the AMA Committee on Nursing Problems, reviewed the suggestions formulated by the committee in seeking an answer to the nursing shortage question: attempt to bring nurses out of retirement, fit as many practical nurses into the picture as possible, train on the job attendants, see to it that work improperly assigned to nurses is given to others, stimulate the recruitment of nurses,

plan a grade of nurses below the present day professional nurse to do bedside nursing under the professional nurse's supervision, attempt to include nurses under the social security act, investigate retirement plans for nurses, consider the possibility of tying in nursing costs with the voluntary prepaid hospital and medical care plans.

R. G. Mayer, Aberdeen, South Dakota, and H. E. Stroy of Osceola, Iowa, assisted Dr. Gray in developing the discussion.

Revamping the course of instruction for general practitioners was among the suggestions brought forward by Mac F. Cahal, Kansas City, Missouri, secretary of the American Academy of General Practice, in his discussion of "The General Practitioner." With added skills and self-confidence, the GP could care for more of his difficult cases instead of referring them to specialists, he pointed out, quoting from a recent survey by a group of eastern specialists who found that more than 800 out of 1,000 cases referred to them by general practitioners could have been or should have been handled by the general practitioner himself.

Roy Fouts, Omaha, Nebraska, and N. G. Alcock, Iowa City, Iowa, served with Mr. Cahal on this discussion team.

Advocating economical use of American medical manpower in preparing for national defense, Harold R. Hennessy, Chicago, secretary of the AMA Council on National Emergency Medical Service, emphasized the need for medical representatives in the higher circles of governmental planning. ". . . America is losing her provincialism," he declared. "In its place there is being created a world consciousness and a sense of world responsibility and leadership, all of which means that American medicine, as a powerful and determining force, rightfully deserves representation in all high level planning assignments. Thus, in the expanding scope of national defense which strongly suggests the size, shape and scale of things to come, we can, through joint efforts, not only assure our national security, but we may also hope to prevent World War III."

Expanding State Association programs to meet present day sociological, political and economic threats was advocated by Floyd L. Rogers, Lincoln, Nebraska, chairman of the Nebraska State Medical Association's planning committee, and his discussants, A. E. Cardle, Minneapolis, and A. D. McCannel, Minot, North Dakota.

Dr. Rogers described Nebraska's plans as a "broadening and correlation of our activities . . . to bring about a maximum in completeness, efficiency and quality of medical service, curative and preventive, with emphasis on the creation of a better understanding between the public and the medical profession."

"In order to accomplish such a broad program, he continued, "we physicians must have a definite change of attitude. We must change from an attitude of stubborn resistance or indifference to one of aggressive and constructive leadership. We must admit that we have shortcomings, and some of these are serious. We must understand that the public realizes these shortcomings more than we, that they suffer because of them, and that they want and will have something done about them. It is for us to look sharply for our own weaknesses and to promptly and aggressively set out to correct them."

Nebraska's program was outlined in seven major points: public health, preventive medicine and health education; self-disciplinary measures; Nebraska Medical Foundation; continuous scientific educational program for the medical profession; Nebraska Medical Service; uniform fee schedule for governmental agencies; continuous sociological research program.

GOVERNOR'S CONFERENCE MAKES HEALTH SUGGESTIONS

The health panel of the Governor's State Conference on Youth, set to work October 18 to recommend conservation measures for the health of the state's estimated 1,000,000 children and youth. "The well being of these people constitutes the most valuable resource of the State," the panel agreed. "The future status of this well-being is dependent in large measure on the health care and protection and education given to the children and young people. Their health is of great concern to the State."

Stressing preventive care, the panel submitted a list of recommendations to the conference which included: extension of qualified prenatal and maternity medical care to all mothers to assure every child the opportunity of being born sound and healthy; medical supervision of children and youth administered through the medium of periodical health appraisals for guidance of growth and development, supervision of nutrition, detection and correction of physical defects and for

the detection, prevention and treatment of emotional and mental disturbances.

The panel favored prevention of dental disease and provision of dental care for pre-school and school children, prevention and control of preventable and communicable diseases and a sanitary environment for each child.

Following the enumerated recommendations, the panel took up the cudgels for local health unit legislation, pointing out that "organization for public health service is deficient in Minnesota, apparent from a brief review of the existing facilities."

"Minnesota has a strong State Health Department which gives a limited direct service from the central office and through eight branch offices. The unit of government which is needed is the full-time local health department which has been developed and recommended for universal adoption by the public health and medical authorities of this country."

Dr. Viktor O. Wilson, city health officer at Rochester and former chief of the special services section, Minnesota State Department of Health, served as chairman of the Health panel.

Other divisions of the conference were: church, community organization and co-ordination, detention and protective care, employment and youth welfare, home and family, housing and youth welfare, institutional handling, juvenile court laws, juvenile justice, law enforcement, recreation and youth participation, rural youth, school and teacher, social services, treatment facilities.

A report of the two-day Conference findings will be available in published form shortly.

MINNESOTA TWELFTH IN NUMBER OF PHYSICIANS

Minnesota, with 4,263 living physicians, ranks twelfth in the nation in number of physicians, according to a recent survey by Frank G. Dickinson, director of the AMA Bureau of Medical Economic Research. States with more doctors are: New York, 30,970; California, 16,069; Pennsylvania, 14,633; Illinois, 13,307; Ohio, 10,091; Massachusetts, 9,102; Texas, 7,621; Michigan, 7,127; New Jersey, 6,585; Indiana, 4,396; Missouri, 5,352.

The Minnesota total is 2.24 per cent of the 199,755 physicians in the entire United States.

Commenting on his study, Dr. Dickinson said: "At this stage of our operations, one important statistical fact emerges. The (approximate) number of living physicians in the United States is now *17 per cent* greater than the 170,163 shown in the 1940 AMA Directory; the population of the United States has increased only *12 per cent* since 1940."

When the tabulation is completed, Dr. Dickinson expects to have a breakdown of the total figures, locating the physicians in such groups as: practicing, retired, employed by federal, state and local health agencies.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Marshall Man Pleads Guilty to Illegal Practice of Massage

Re. State of Minnesota vs. Frank Sprader

On November 15, 1948, Frank Sprader, forty-eight years of age, Marshall, Minnesota, entered a plea of guilty in the District Court of Lyon County, Minnesota, to an information charging him with the crime of practicing massage without a license. Following a statement of the facts to the Court, Sprader was sentenced by the Hon. A. H. Enersen, Judge of the District Court, to a term of three months in the Lyon County jail. The sentence was suspended for a period of one year on condition the defendant pay the Court costs and obey all the laws of the State of Minnesota, including the massage law. Sprader must also report to the County Attorney of Lyon County, once every two months during his probation.

Sprader stated to the Court that he was born at Manitowoc, Wisconsin, in 1900 and that he moved to Ivanhoe, Minnesota, in 1908. Sprader stated that he is married and has eight children ranging from less than one year to seventeen years. Sprader admitted that he had been practicing massage at Marshall, Minnesota, since January, 1947. He stated he averaged about four patients per day and charged $2.00 per treatment. Sprader had in his possession at the time of his arrest a massage diploma from the College of Swedish Massage, Chicago, Illinois. Sprader admitted that he did not attend the school but took a correspondence course. The diploma is dated October 30, 1945, and reads as follows:

"Frank S. Sprader has completed a prescribed course in Health Culture and has passed a creditable examination in the art of scientific Swedish Massage, Medical Gymnastics, Dietetics, Hydro Therapy, Swedish Face and Scalp Treatment, Hygiene and the underlying principles of anatomy and physiology."

Sprader stated to the Court that he ceased practicing massage at the time of his arrest in June. Upon being asked by Judge Enersen as to how he was making his living at the present time, Sprader replied that he was doing carpenter work and also paper hanging. The Minnesota State Board of Medical Examiners wishes to acknowledge the co-operation received in this case from C. J. Donnelly, County Attorney of Lyon County, and also Sheriff Roland Rans and Deputy Sheriff Knute Bergman of Lyon County.

Minnesota State Board of Medical Examiners

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

PHYSICIANS LICENSED FEBRUARY 6, 1948

January 1948 Examination

Name	*School*		*Address*
ADAMS, Neil Dahlen	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
BLOCK, Melvin August	Indiana U.	MD 1944	Mayo Clinic, Rochester, Minn.
BURGESS, Harry Meredith	McGill U.	MD 1944	Mayo Clinic, Rochester, Minn.
DAILY, Jr., Louis	U. of Texas	MD 1943	Mayo Clinic, Rochester, Minn.
DODGE, Mark	U. of Kans.	MD 1941	Mayo Clinic, Rochester, Minn.
ENDERS, Walter R.	U. of Ore.	MD 1947	Ancker Hospital, Saint Paul, Minn.
FURMAN, Lucie Christine	U. of Minnesota	MD 1947	307 Union St. S.E., Minneapolis, Minn.
GROOM, Joe John	Ohio State U.	MD 1941	Mayo Clinic, Rochester, Minn.
HAKANSON, Erick Yngve	U. of Minnesota	MD 1945	225 Med. Sciences Med. Sch., University of Minnesota, Minneapolis, Minn.
HAMMOND, Don Robert	Northwestern U.	MD 1944	Ebling Clinic, Mt. Vernon, Wash.
HAVEL, Robert Joseph	Creighton U.	MD 1947	229 Macalester Ave., Saint Paul, Minn.
HEISE, Carl von Rohr	Jefferson Med. Col.	MD 1944	Franklin and Sarnia Sts., Winona, Minn.
HOFMANN, Gerald Norbert	Marquette U.	MD 1947	St. Joseph's Hosp., Saint Paul, Minn.
HUNTER, Jr., James Stanley	U. of Maryland	MD 1941	Mayo Clinic, Rochester, Minn.
ISRAELS, Max	U. of Manitoba	MD 1929	806 Broder Bldg., Regina, Sask., Canada
JAMES, John W.	U. of Minnesota	MD 1946	Lake Crystal, Minn.
JAMISON, Robert Watt	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
KAPLAN, Joseph Harold	U. of Illinois	MD 1938	Mayo Clinic, Rochester, Minn.
KITZBERGER, Jr., Peter Joseph	Marquette U.	MD 1947	819 N. Washington St., New Ulm, Minn.
KUCERA, Louis Benedict	Marquette U.	MD 1946	Lonsdale, Minn.
KULWIN, Myron Herman	U. of Illinois	MD 1944	Mayo Clinic, Rochester, Minn.
McDONALD, Roger Koefod	U. of Minnesota	MD 1946	113 Anatomy Bldg., University of Minnesota, Minneapolis, Minn.
MURPHY, George Herman	Dalhousie U.	MD 1940	Mayo Clinic, Rochester, Minn.
PATERSON, Philip Young	U. of Minnesota	MB 1947	Minneapolis General Hosp., Minneapolis 15, Minn.
PATTON, Jr., Matthew Moss	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
POWER, Jr., John Edward	Northwestern U.	MD 1947	Miller Hospital, Saint Paul, Minn.
RANDALL, Samuel John	Ohio State U.	MD 1942	Mayo Clinic, Rochester, Minn.
SCHIRBER, Martin Joseph	Northwestern U.	MD 1946	121 W. 9th, Grand Rapids, Minn.
STAYTON, Jr., Chester Arthur	Indiana U.	MD 1943	Mayo Clinic, Rochester, Minn.
THEISSEN, Hubert Herbert	Marquette U.	MD 1947	801 N. Franklin, New Ulm, Minn.

Reciprocity Candidates

BRACELAND, Francis James	Jefferson Med. Col.	MD 1930	Mayo Clinic, Rochester, Minn.
CURTIS, Dean Daniel	St. Louis U.	MD 1947	Ivanhoe, Minnesota
ERDAL, Ove Arthur Emil	U. of Minnesota	MD 1944	126 E. William St., Albert Lea, Minn.
HAGGAR, David Kalil	U. of Nebr.	MD 1943	Mountain Lake, Minn.
HECK, Walter E.	Syracuse U.	MD 1941	Mayo Clinic, Rochester, Minn.
JONES, George William	U. of Minnesota	MD 1946	Mayo Clinic, Rochester, Minn.
LECKLITNER, Myron DeVoy	Jefferson Med. Col.	MD 1934	St. Barnabas Hospital, Minneapolis, Minn.
RAE, James Weaver	U. of Michigan	MD 1943	Mayo Clinic, Rochester, Minn.
SCHMIDT, Ruben Frederick	U. of Wisconsin	MD 1943	Alden, Minn.
SCRIBNER, Belding Hibbard	Stanford U.	MD 1945	Mayo Clinic, Rochester, Minn.
SPOCK, Benjamin McLane	Columbia U.	MD 1929	Mayo Clinic, Rochester, Minn.
TORRE, Mottram Peter	Tulane U.	MD 1943	Students' Health Service, University of Minnesota, Minneapolis 14, Minn.
ZICK, Luther Herman	U. of Michigan	MD 1943	Mayo Clinic, Rochester, Minn.

National Board Candidates

ALDRICH, Clarence Knight	Northwestern U.	MD 1940	Students' Health Service, University of Minnesota, Minneapolis 14, Minn.
BERGER, Alfred Jacob	Harvard U.	MD 1940	Students' Health Service, University of Minnesota, Minneapolis 14, Minn.
CARRIS, James Vernon	U. of Illinois	MD 1942	University of Minnesota Division of Otolaryngology, Minneapolis, Minn.

Name	*School*		*Address*
CREHAN, Elmer Leo	Boston U.	MD 1943	Mayo Clinic, Rochester, Minn.
EDDY, Frank Dayton	U. of Vermont	MD 1942	Department of Surgery, University of Minnesota, Minneapolis 14, Minn.
FAZIO, Anthony Nicholas	New York Med. Col.	MD 1943	Mayo Clinic, Rochester, Minn.
LIVERMORE, George Robertson	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
NOEHREN, Theodore Henry	Rochester U.	MD 1942	Mayo Clinic, Rochester, Minn.
ROME, Howard Phillips	Temple U.	MD 1935	Mayo Clinic, Rochester, Minn.
TURNBULL, Theodore	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
WARD, Louis Emmerson	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
WASMUND, Clarence William	Long Is. Col.	MD 1944	Interstate Clinic, 3rd & Dakota Streets, Red Wing, Minn.

PHYSICIANS LICENSED MAY 14, 1948

April 1948 Examination

Name	*School*		*Address*
ANDERSON, Jr., Markham John	U. of Minnesota	MD 1947	40 S. Snelling Ave., Saint Paul, Minn.
ANDERSON, Robert Leonard	Northwestern U.	MD 1943	Mayo Clinic, Rochester, Minn.
ANTHONY, Jr., Walter Philip	Indiana U.	MD 1943	Mayo Clinic, Rochester, Minn.
ARAM, Hartley Herrick	U. of Illinois	MD 1946	706 Hazelwood, Detroit 2, Mich.
ARNOLD, Samuel J.	St. Louis U.	MD 1940	Mayo Clinic, Rochester, Minn.
BALL, Warren Philip	Indiana U.	MD 1942	Mayo Clinic, Rochester, Minn.
BASKIN, Roy Howard	U. of Texas	MD 1942	Mayo Clinic, Rochester, Minn.
BEGLEY, Jr., Joseph Walter	Northwestern U.	MD 1946	Mayo Clinic, Rochester, Minn.
BELLEGIE, Nicholas Joseph	U. of Texas	MD 1944	Mayo Clinic, Rochester, Minn.
BOYER, George Savage	U. of Oregon	MD 1938	X-Ray Dept., University of Minnesota, Minneapolis 14, Minn.
BOYSEN, James Frederick	U. of Minnesota	MD 1948	Madelia, Minnesota
BRADLEY, Nelson John	U. of Alberta	MD 1943	Pouch A, State Hospital, Hastings, Minn.
BRANDENBURG, Robert Orville	U. of Pennsylvania	MD 1943	Mayo Clinic, Rochester, Minn.
BUFFMIRE, Donald King	Northwestern U.	MD 1947	Mayo Clinic, Rochester, Minn.
CONLEY, Charles Callaghan	U. of Minnesota	MD 1947	982 E. Ivy Ave., Saint Paul, Minn.
CORNWALL, Milton Arthur	Marquette U.	MD 1946	Baldwin, Wisconsin
DOLAN, Ronald Allan	Queen's U.	MD 1944	1118 Seventh St. S.E., Minneapolis 14, Minn.
DRESCHER, Edward Philip	U. of California	MD 1940	Mayo Clinic, Rochester, Minn.
ENGEL, Joseph Peter Frank	U. of Manitoba	MD 1944	Mayo Clinic, Rochester, Minn.
FALBISANER, George Jerome	Col. Med. Evan.	MD 1948	Riverside Co. Hospital, Arlington, Calif.
FREEMAN, Craig W.	Indiana U.	MD 1945	Institute of Anatomy, University of Minnesota, Minneapolis 14, Minn.
FRYS, Russell Nicholas	Marquette U.	MD 1946	1154 Randolph Ave., Saint Paul 5, Minn.
GILLMAN, Louis	U. of Minnesota	MD 1945	336 Pleasant Ave., Saint Paul, Minn.
GLEASON, Donald Floyd	U. of Minnesota	MD 1945	Veterans Administration Hospital, Minneapolis, Minn.
GOOD, Harold Victor	U. of Oregon	MD 1947	Scandinavian Alliance Mission, 2839 W. McLean Ave., Chicago 47, Ill.
HARRIE, John Raymond	U. of Illinois	MD 1947	Grey Eagle, Minn.
HAYES, Daniel William	Northwestern U.	MD 1947	Mayo Clinic, Rochester, Minn.
HILSABECK, John Richard	Creighton U.	MD 1943	Mayo Clinic, Rochester, Minn.
HINKE, Dayton Henry	U. of Pennsylvania	MD 1944	Department of Anesthesiology, University of Minnesota Hospitals, Minneapolis, Minn.
JAMPOLIS, Robert Warren	U. of Chicago	MD 1944	Mayo Clinic, Rochester, Minn.
JOHNSON, Melford Ivan	Jefferson Med. Col.	MD 1944	Mayo Clinic, Rochester, Minn.
KELTY, Richard Harry	U. of Michigan	MD 1943	Mayo Clinic, Rochester, Minn.
KRYSTOSEK, Lee Albin	Loyola U.	MD 1945	Box 633, Holdingford, Minn.
LUNGSTROM, Ronald Edward	U. of Minnesota	MD 1947	4212 Palmetto Way, San Diego, Calif.
MAGRAW, Charles Elliott	U. of Minnesota	MB 1947	St. Luke's Hospital, Duluth, Minn.
McBURNEY, Robert Powers	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
McCORMACK, Lawrence J.	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
McLEOD, Jr., John Joseph	Marquette U.	MD 1947	Olivia, Minn.
MOORE, Boliver Baylous	Meharry Med. Col.	MD 1943	809 Aldrich Ave. N., Minneapolis, Minn.
NOWAK, Delwyn James	Northwestern U.	MD 1947	Mayo Clinic, Rochester, Minn.
O'NEILL, John Campbell	U. of Manitoba	MD 1939	Duluth Clinic, 205 W. 2nd St., Duluth, Minn.
PATTON, James Moss	Northwestern U.	MD 1947	Mayo Clinic, Rochester, Minn.
PETERSON, Palmer Alexander	Marquette U.	MD 1947	2643 Elliot Ave., Minneapolis, Minn.
PHILLIPS, John Francis	U. of Indiana	MD 1944	State Hospital, St. Peter, Minn.
RANDALL, Warren Hart	U. of Iowa	MD 1943	Mayo Clinic, Rochester, Minn.
REID, John Hugh	St. Louis U.	MD 1947	Fairview Hospital, Minneapolis, Minn.
RIDDELL, Richard Vernon	Harvard U.	MD 1942	Mayo Clinic, Rochester, Minn.
SCHAAR, Frances Elizabeth	U. of Illinois	MD 1946	Students' Health Service, University of Minnesota, Minneapolis, Minn.
SCHMIDT, John Rempel	U. of Kansas	MD 1938	Mountain Lake, Minn.
SCHOREGGE, Robert Daniel	U. of Illinois	MD 1947	507 6th St., Bismarck, No. Dak.

Name	*School*		*Address*
SCHWEPPE, John Shedd	Northwestern U.	MD 1943	Mayo Clinic, Rochester, Minn.
SENTY, Robert Myron	U. of Wisconsin	MD 1947	Miller Hospital, Saint Paul, Minn.
SHORT, Eugene H.	U. of Minnesota	MD 1945	1103 Rose Ave., Worthington, Minn.
SPENCE, Bartholomew John	Northwestern U.	MD 1943	Mayo Clinic, Rochester, Minn.
TILLOTSON, John Franklin	U. of Ohio	MD 1943	Mayo Clinic, Rochester, Minn.
WRIGHT, Thomas Dissmore	U. of Minnesota	MD 1945	Asbury Hospital, 916 E. 15th St., Minneapolis 4, Minn.

Reciprocity Candidates

BELLOMO, James	St. Louis U.	MD 1947	808 E. 3rd St., Saint Paul, Minn.
DWORETZKY, Murray	Long Is. Col.	MD 1942	Mayo Clinic, Rochester, Minn.
GERSTEN, Jerome William	New York U.	MD 1939	Mayo Clinic, Rochester, Minn.
HALBERT, John Jerrard	Rush-Chicago U.	MD 1940	1115 Med. Arts Bldg., Duluth, Minn.
HARNAGEL, Edward Everett	Jefferson Med. Col.	MD 1943	Mayo Clinic, Rochester, Minn.
HARTJEN, Jason Kellough	Wayne U.	MD 1944	217½ Third St., Bemidji, Minn.
KOEFOOT, Robert Reese	U. of Nebraska	MD 1947	Miller Hospital, Saint Paul, Minn.
NICHOLSON, III, John Whitall	U. of Pennsylvania	MD 1941	Mayo Clinic, Rochester, Minn.
SCHMIDT, Werner Fritz	Wayne U.	MD 1943	University of Minnesota Hospitals, Department of Psychiatry, Minneapolis, Minn.

National Board Candidates

BENNETT, Henry Stanley	Harvard U.	MD 1945	Mayo Clinic, Rochester, Minn.
BERNATZ, Philip Eugene	U. of Iowa	MD 1944	Mayo Clinic, Rochester, Minn.
BUTCHER, William Alexander	U. of Pennsylvania	MD 1945	Stewartville, Minn.
DECKER, David Garrison	Yale U.	MD 1942	Mayo Clinic, Rochester, Minn.
DeKRUIF, Hendrik	Yale U.	MD 1942	227 Millard Hall, University of Minnesota Medical School, Minneapolis 14, Minn.
FREEDMAN, Donald Kenneth	Tufts Med. Col.	MD 1936	5601 Grand Ave., Duluth 7, Minn.
FRICK, Adelaide Howard Childs	Yale U.	MD 1943	Box 675, Child Health Institute, Rochester, Minn.
FULLER, Josiah	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
HALL, Buford	Harvard U.	MD 1945	Mayo Clinic, Rochester, Minn.
KLECKNER, Jr., Martin Seler	U. of Pennsylvania	MD 1945	Mayo Clinic, Rochester, Minn.
MIGHELL, Scott James	U. of Iowa	MD 1945	University of Minnesota, Department of Surgery, Minneapolis 14, Minn.
PATEY, Robert Thayer	Harvard U.	MD 1944	119 State St., Buhl, Minn.
SHANDS, Wilbourn Coupery	Vanderbilt U.	MD 1945	Mayo Clinic, Rochester, Minn.
TAKARO, Timothy	N. Y. Univ.	MD 1943	Mayo Clinic, Rochester, Minn.
TEITGEN, Ralph Emil	U. of Pennsylvania	MD 1944	Mayo Clinic, Rochester, Minn.

PHYSICIANS LICENSED JULY 9, 1948

June 1948 Examination

Name	*School*		*Address*
ARNESEN, Paul Musaus	New York U.	MD 1947	Newport, Minn.
BARRON, Jesse John	U. of Minnesota	MB 1948	St. Mary's Hospital, Duluth, Minn.
BIANCO, Jr., Anthony Joseph	U. of Minnesota	MB 1948	St. Mary's Hospital, Duluth, Minn.
BITNER, Leland Merle	U. of Minnesota	MB 1948	Letterman General Hospital, San Francisco, Calif.
BLOCHOWIAK, Norbert Paul	U. of Minnesota	MB 1948	Ancker Hospital, Saint Paul, Minn.
BOEKELHEIDE, Priscilla Day	U. of Minnesota	MB 1948	3959 Xenia Ave., Robbinsdale, Minn.
BOUCEK, Robert Joseph	U. of Pittsburgh	MD 1943	Mayo Clinic, Rochester, Minn.
BOYSEN, Alexander Marius	U. of Minnesota	MB 1948	St. Francis Hospital, 45th and Pennsylvania Ave., Pittsburgh 1, Pa.
BROOKING, Donald George Wm.	U. of Minnesota	MB 1948	Detroit Receiving Hospital, Detroit, Mich.
DAVIS, Jr., William Harris	U. of Indiana	MD 1940	Two Harbors Hospital, Two Harbors, Minn.
DERAUF, Donald Evensta	U. of Minnesota	MB 1948	St. Luke's Hospital, Duluth, Minn.
DIXON, Allan Alvin	U. of Alberta	MD 1945	Minneapolis General Hospital, Minneapolis, Minn.
EGDAHL, John Emery	U. of Minnesota	MB 1948	Northwestern Hospital, Minneapolis, Minn.
ENGSTROM, Ruby Maria	U. of Minnesota	MB 1948	Wayne Co. General Hospital, Eloise, Mich.
ERICKSON, Myron Elwood	U. of Minnesota	MB 1948	Swedish Hospital, Minneapolis, Minn.
EYSTER, Jr., William Henry	U. of Pennsylvania	MD 1943	Mayo Clinic, Rochester, Minn.
FALSETTI, Frank Peter	Marquette U.	MD 1942	Mayo Clinic, Rochester, Minn.

Name	*School*		*Address*
FINK, Robert John	U. of Minnesota	MB 1948	St. Luke's Hospital, Chicago, Ill.
GRAHAM, George Grimsley	U. of Arkansas	MD 1947	609 Medical Arts Bldg., Minneapolis, Minn.
GREEN, Clayton Robbie	U. of Minnesota	MB 1948	University of Minnesota Hospital, Minneapolis, Minn.
HALVORSON, James William	U. of Minnesota	MB 1948	St. Mary's Hospital, Duluth, Minn.
HEINE, Jr., George Winfield	U. of Minnesota	MB 1948	St. Luke's Hospital, Duluth, Minn.
HERING, George Vosburgh	U. of Minnesota	MD 1945	Denmark, Wisconsin
HILL, Eldon Fred	U. of Wisconsin	MD 1947	303 Court St., Janesville, Wis.
HOLLAND, Cleon Richard	Hahneman Med. Col.	MD 1940	512 2nd Ave. S. W., Rochester, Minn.
HUDSPETH, William Theron	Cornell U.	MD 1942	2425 29th Ave. So., Minneapolis, Minn.
JACOBSON, Loren Joel	U. of Minnesota	MB 1948	Minneapolis General Hospital, Minneapolis, Minn.
JANDA, Jr., George Walter	U. of Minnesota	MD 1948	Bertha, Minn.
JENSEN, Robert Travis	U. of Minnesota	MB 1948	Miller Hospital, Saint Paul, Minn.
JOSEPH, Sheldon William	U. of Minnesota	MB 1948	Detroit Receiving Hospital, Detroit, Mich.
JOYER, Robert Michael	U. of Minnesota	MB 1948	Wayne Co. General Hospital, Eloise, Mich.
KADAS, Warren Andrew	U. of Minnesota	MB 1948	Emanuel Hospital, Portland, Ore.
KEPPEN, Ford F.	U. of Indiana	MD 1935	557 Lowry Medical Arts Bldg., Saint Paul, Minn.
KIELY, William Francis	U. of Illinois	MD 1941	Mayo Clinic, Rochester, Minn.
KLOBUCAR, James John	Marquette U.	MD 1947	Wabasha, Minn.
KOPP, Clarence John	U. of Oregon	MD 1947	Nyssa, Oregon
KUSHNER, Paul J.	U. of Minnesota	MB 1948	Beth-El Hospital, Brooklyn 12, New York
LEWIS, Jr., Joyce Sansen	U. of Minnesota	MB 1948	University of Minnesota Hospitals, Minneapolis 14, Minn.
LOCKETZ, Harold David	U. of Minnesota	MB 1948	1820 1st Ave. So., Minneapolis, Minn.
LOWMAN, Edward Wynne	Med. Col. of S. Carolina	MD 1940	Mayo Clinic, Rochester, Minn.
LUTTGENS, William Frederick	Stanford U.	MD 1944	Mayo Clinic, Rochester, Minn.
MADENBERG, Fred	U. of Minnesota	MB 1948	1508 S. St. Louis Ave., Chicago, Ill.
MAGEE, Mary Lucille	U. of Texas	MD 1946	Minneapolis General Hospital, Minneapolis Minn.
MARGOLIS, Philip Marcus	U. of Minnesota	MB 1948	Milwaukee Co. Hospital, Wauwatosa, Wis.
MILLER, Winston Rivard	U. of Kansas	MD 1943	Interstate Clinic, Red Wing, Minn.
NEILS, Vernon Emil	U. of Minnesota	MB 1948	St. Barnabas Hospital, Minneapolis, Minn.
NELSON, Clifford Edward	U. of Minnesota	MB 1948	U. S. Marine Hospital, San Francisco, Calif.
NEUMEISTER, Charles A.	U. of Minnesota	MB 1948	628 E. Franklin Ave., Minneapolis, Minn.
ORME, Harry William	U. of Minnesota	MB 1948	University of Minnesota Hospitals, Minneapolis 14, Minn.
ORME, James Forrest	U. of Chicago	MD 1940	5304 39th Ave. So., Minneapolis, Minn.
PASEK, Edward Antone	U. of Minnesota	MB 1948	St. Luke's Hospital, Duluth, Minn.
PERLMAN, Herschel Leon	U. of Minnesota	MD 1942	Veterans Hospital, Hot Springs, So. Dak.
PERRIGO, Vernon Fred	U. of Minnesota	MB 1948	Minneapolis General Hospital, Minneapolis, Minn.
PETERSON, Edward Alfred	St. Louis U.	MD 1947	649 Iglehart Ave., Saint Paul, Minn.
PFROMMER, Jr., John Robert	U. of Minnesota	MB 1948	Indianapolis General Hospital, Indianapolis, Indiana
PITTENGER, Rex Arthur	U. of Minnesota	MB 1948	Miller Hospital, Saint Paul, Minn.
PORTER, George Edward	Georgetown U.	MD 1945	Mayo Clinic, Rochester, Minn.
PROCHASKA, Leonard Joseph	Marquette U.	MD 1947	Baudette, Minn.
REIKES, Dan	U. of Minnesota	MB 1948	Sydenham Hospital, 565 Manhattan Ave., New York, N. Y.
RHOLL, Arnold Olin	U. of Minnesota	MB 1948	Northwestern Hospital, Minneapolis, Minn.
RUZICKA, Jr., Francis Frederick	Johns Hopkins U.	MD 1943	University of Minnesota Hospitals, Minneapolis, Minn.
RYAN, William Henry	U. of Minnesota	MD 1946	310 2nd St. S. E., Little Falls, Minn.
SALK, Richard James	U. of Minnesota	MB 1948	Ancker Hospital, Saint Paul, Minn.
SCHNEIDER, John Joseph	U. of Chicago	MD 1943	4148 Garfield Ave. So., Minneapolis, Minn.
SCHNEITER, Jr., Harry Edward	U. of Minnesota	MB 1948	Wayne Co. General Hospital, Eloise, Mich.
SMERSH, Thomas Clement	U. of Minnesota	MB 1948	St. Mary's Hospital, Minneapolis, Minn.
SONTAG, Stanley John	U. of Minnesota	MB 1948	St. Luke's Hospital, Denver, Colo.
STIMSON, Paul Reeve	U. of Cincinnati	MD 1947	Pontiac State Hospital, Pontiac, Mich.
STOWE, Harold Robert	U. of Nebraska	MD 1941	Mayo Clinic, Rochester, Minn.
STRONG, Charles Curtis	U. of Minnesota	MB 1948	628 E. Franklin, Minneapolis, Minn.
THORNTON, Mary	U. of Minnesota	MB 1948	St. Luke's Hospital, Chicago, Ill.
VIRNIG, Hildegard Josephine	U. of Minnesota	MB 1948	Wesley Memorial Hospital, Chicago, Ill.
WEST, Louis J.	U. of Minnesota	MB 1948	University of Minnesota Hospitals, Minneapolis, Minn.
WILLIAMS, John Irving	U. of Minnesota	MB 1948	Presbyterian Hospital, Chicago, Ill.

Name	*School*		*Address*
	Reciprocity Candidates		
ANDERSON, Thomas Page	U. of Oklahoma	MD 1943	Mayo Clinic, Rochester, Minn.
BLOOM, Norman Behr	U. of Minnesota	MD 1940	506 Physicians & Surgeons Bldg., Minneapolis 2, Minn.
CARROLL, Thomas Thurlow	U. of Illinois	MD 1943	Mayo Clinic, Rochester, Minn.
CLARK, Clarence Lawrence	St. Louis U.	MD 1940	5601 Grand Ave., Duluth, Minn.
FOULK, Jr., William Theodore	U. of Pennsylvania	MD 1942	Mayo Clinic, Rochester, Minn.
GOUDE, Albert Gordon	Col. of Med. Evangelists	MD 1948	c/o Dr. C. J. Martinson, Wayzata, Minn.
HINES, Robert Andrew	St. Louis U.	MD 1947	Wayne Co. General Hospital, Eloise, Mich.
HULME, Harold Benjamin	U. of Utah	MD 1944	University of Minnesota Hospitals, Minneapolis 14, Minn.
KOUTSKY, Carl Donald	U. of Nebraska	MD 1947	1044 Lowry Medical Arts Bldg., Saint Paul, Minn.
KURTH, Robert John	Creighton U.	MD 1946	Lenont-Peterson Clinic, Virginia, Minn.
MONSOUR, Karem John	U. of Nebraska	MD 1945	Mayo Clinic, Rochester, Minn.
PREWITT, Gordon	U. of Oregon	MD 1942	Box 302, Mayo Clinic, Rochester, Minn.
RECHLITZ, Ervin Thaddeus	Marquette U.	MD 1937	517 Triangle Drive, Albert Lea, Minn.
STORSTEEN, Kenneth Andrew	U. of Nebraska	MD 1945	Tyler, Minnesota
	National Board Candidates		
BOISCLAIR, Thomas George	Geo. Wash. U.	MD 1947	A. & P. Bldg., Washington Ave., Detroit Lakes, Minn.
HARVEY, Elinor Beatrice	Tufts Med. Col.	MD 1936	5601 Grand Ave., Duluth, Minn.
HILLS, Oscar Weir	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
KREISLE, James Edwin	Harvard U.	MD 1942	Mayo Clinic, Rochester, Minn.
WOOLLING, Kenneth Rau	Indiana U.	MD 1943	Mayo Clinic, Rochester, Minn.

PHYSICIANS LICENSED NOVEMBER 12, 1948

October 1948 Examination

Name	*School*		*Address*
ALLEN, Jr., Lewis George	U. of Kansas	MD 1945	Mayo Clinic, Rochester, Minn.
AUSTIN, Grover Wiggins	U. of Tennessee	MD 1944	Mayo Clinic, Rochester, Minn.
BASTRON, James Arthur	U. of Iowa	MD 1944	Mayo Clinic, Rochester, Minn.
BOYCE, Raymond Adolphe	U. of Minnesota	MD 1948	120 Seymour Ave. S. E., Minneapolis, Minn.
BRIDENBAUGH, Richard Baird	U. of Colorado	MD 1944	University of Minnesota Hospitals, Minneapolis 14, Minn.
BROWN, Ian Alexander	McGill U.	MD 1944	2444 N. Logan Ave., Minneapolis, Minn.
BURESH, Kenneth Lee	U. of Iowa	MD 1947	Lime Springs, Iowa
CHANCE, Donald Paul	U. of Virginia	MD 1943	Mayo Clinic, Rochester, Minn.
COMBS, Robert Gerald	U. of Cincinnati	MD 1943	Mayo Clinic, Rochester, Minn.
COOK, James Randel	U. of Indiana	MD 1944	Mayo Clinic, Rochester, Minn.
CRENSHAW, Jr., John Lewis	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
CROSS, Jr., Louis Lee	Georgetown U.	MD 1944	2111 Minneapolis Ave., Minneapolis, Minn.
CRUMPACKER, Edgar Lee	U. of Virginia	MD 1942	Mayo Clinic, Rochester, Minn.
CURTISS, Robert Kimber	U. of Maryland	MD 1943	Mayo Clinic, Rochester, Minn.
DAVIS, Robert Elwyn	U. of Pittsburgh	MD 1946	Mayo Clinic, Rochester, Minn.
DIEFENBACH, Jr., Eugene John	U. of Minnesota	MB 1948	Northwestern Hospital, Minneapolis, Minn.
DIEFENBACH, Jeanne Dahl	U. of Minnesota	MB 1948	Northwestern Hospital, Minneapolis, Minn.
DODGE, Jr., Henry William	Columbia U.	MD 1943	Mayo Clinic, Rochester, Minn.
ELLINGER, Albert John	U. of Minnesota	MD 1943	Northwestern Hospital, Minneapolis, Minn.
FAULKNER, James William	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
FEFERMAN, Martin Earl	U. of Michigan	MD 1946	601 Ridgewood Ave., Minneapolis, Minn.
GOODNOW, William Herbert	U. of Minnesota	MB 1948	University of Minnesota Hospitals, Minneapolis 14, Minn.
HOM, Leong Yale Woo	U. of Minnesota	MB 1948	St. Barnabas Hospital, Minneapolis, Minn.
HOOD, Jr., Robert Thurlow	U. of Pittsburgh	MD 1944	Mayo Clinic, Rochester, Minn.
JOLLY, Ruth Margarita	U. of Minnesota	MD 1948	318 Harvard St. S. E., Minneapolis, Minn.
JUDD, Allen Shelp	U. of Minnesota	MD 1946	1627 22nd Ave. N., Minneapolis, Minn.
KELLEY, Edmund Parmelee	Harvard U.	MD 1942	Mayo Clinic, Rochester, Minn.
KELSEY, Jr., John Roger	Baylor U.	MD 1945	Mayo Clinic, Rochester, Minn.
KEMP, Thomas Schreiner	U. of Minnesota	MD 1948	615 N. 4th St., Mankato, Minn.
KIMBROUGH, Robert Franklin	U. of Indiana	MD 1944	Mayo Clinic, Rochester, Minn.
KOENECKE, Jr., Fred Henry	U. of Minnesota	MB 1948	Minneapolis General Hospital, Minneapolis 15, Minn.
KRAKOWKA, George Frank	U. of Chicago	MD 1945	Mayo Clinic, Rochester, Minn.
LeMASTER, Theodore R.	U. of Indiana	MD 1947	Minneapolis General Hospital, Minneapolis, Minn.

Name	*School*		*Address*
LEWIS, Jr., Miles Leslie	Tulane U.	MD 1944	Mayo Clinic, Rochester, Minn.
LOWRY, Paul Thorpe	Harvard U.	MD 1945	Mayo Clinic, Rochester, Minn.
McWHORTER, Henry Etten	U. of Chicago	MD 1944	Mayo Clinic, Rochester, Minn.
MOBERG, Thomas David	U. of Minnesota	MD 1948	5901 Oakland Ave. So., Minneapolis, Minn.
MOORHEAD, Marie	Ohio State U.	MD 1943	512 Delaware St. S. E., Minneapolis 14, Minn.
MORRISON, Roger William	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
NICE, Jr., Charles Monroe	U. of Kansas	MD 1943	P-58 University Village, 29th and Como, Minneapolis 14, Minn.
OPENSHAW, Calvin Reynolds	U. of Utah	MD 1944	Mayo Clinic, Rochester, Minn.
PHARES, Walter Shoemaker	Northwestern U.	MD 1946	Mayo Clinic, Rochester, Minn.
RAATTAMA, John Webster	U. of Minnesota	MB 1948	317 Union St. S. E., Minneapolis 14, Minn.
REED, Jr., John Porter	U. of Minnesota	MB 1948	1455 Fulham St., Saint Paul, Minn.
SANDS, James Howard	U. of Wisconsin	MD 1947	805 S. E. 7th St., Minneapolis, Minn.
SMITH, Philip Leroy	St. Louis U.	MD 1944	Mayo Clinic, Rochester, Minn.
STINSON, Jr., James Cotton	U. of Texas	MD 1945	Mayo Clinic, Rochester, Minn.
TWIDWELL, Joseph Edward	Creighton U.	MD 1948	St. Mary's Hospital, Minneapolis, Minn.
ULRICH, Delmont M.	U. of Minnesota	MD 1944	1700 University Ave., St. Paul 4, Minn.
UZMANN, John William	Georgetown U.	MD 1945	Mayo Clinic, Rochester, Minn.
WANDKE, Otto Edward	Northwestern U.	MD 1944	105 S. North Ave., Fairmont, Minn.
WIGGERS, Jr., Lowe Henry	U. of Cincinnati	MD 1942	Mayo Clinic, Rochester, Minn.

Reciprocity Candidates

BARNETT, George Louis	Creighton U.	MD 1947	Graceville, Minn.
BOLGER, James Victor	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
BROBYN, Charles Wilmer	Hahnemann Med. College	MD 1944	Fairview Hospital, Minneapolis, Minn.
CALLAN, Terrance Dennis	St. Louis U.	MD 1945	908½ 15th Ave. N., Virginia, Minn.
CANNON, Bland Wilson	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
CAPLAN, Leslie	Ohio State U.	MD 1936	1728 2nd Ave. S., Apt. 103, Minneapolis, Minn.
CHRISTIE, David Parker	U. of Nebraska	MD 1944	Mayo Clinic, Rochester, Minn.
EBY, Lee George	U. of Wisconsin	MD 1943	Mayo Clinic, Rochester, Minn.
ELLIS, Eugene Joseph	U. of So. California	MD 1944	Mayo Clinic, Rochester, Minn.
ERNST, Jr., Edwin Charles	St. Louis U.	MD 1943	Mayo Clinic, Rochester, Minn.
FRANK, Ludwig Mathias	U. of Pennsylvania	MD 1945	State Hospital, Rochester, Minn.
GARVEY, James Thomas	St. Louis U.	MD 1947	1313 Irving Ave. N., Minneapolis 11, Minn.
GOLDSTEIN, Oscar Emanuel	Cornell U.	MD 1941	5601 Grand Ave., Duluth, Minn.
HUGENBERG, William Charles	U. of Cincinnati	MD 1945	Mayo Clinic, Rochester, Minn.
JONES, David Griffith	Western Reserve	MD 1944	2418 W. 22nd St., Minneapolis 5, Minn.
KNIGHT, Charles Daniel	Tulane U.	MD 1944	Mayo Clinic, Rochester, Minn.
KNUDSON, Richard Arnold	U. of Louisville	MD 1945	Forest Lake, Minn.
LESTER, Jr., Malcolm James	U. of Louisville	MD 1947	Swedish Hospital, Minneapolis, Minn.
LOVSHIN, William	U. of Wisconsin	MD 1947	603 Grant Ave., Eveleth, Minn.
McCABE, James Stephen	U. of Louisiana	MD 1940	1927 Dayton Ave., Saint Paul 4, Minn.
MEADOWS, Edward Russell	Tulane U.	MD 1946	Mayo Clinic, Rochester, Minn.
MEYER, Bert Jack	U. of Wisconsin	MD 1945	Mayo Clinic, Rochester, Minn.
MORROW, Jr., Robert Prosser	Tulane U.	MD 1940	Mayo Clinic, Rochester, Minn.
SEALE, Ruth A.	U. of California	MD 1947	Mayo Clinic, Rochester, Minn.
SHARP, Merle Calvin	U. of Louisville	MD 1944	Virginia, Minn.
SOULE, Edward Hersey	Yale U.	MD 1943	Mayo Clinic, Rochester, Minn.
STEGMAIER, Jr., Otto Charles	St. Louis U.	MD 1943	Mayo Clinic, Rochester, Minn.
STEINER, Leon Ethelbert	U. of Nebraska	MD 1947	Albert Lea, Minn.
STREWLER, Gordon Jerome	U. of Wisconsin	MD 1943	600 Alworth Bldg., Duluth, Minn.
WEBB, James Hugh	U. of Cincinnati	MD 1945	Mayo Clinic, Rochester, Minn.

National Board Candidates

BECKER, Jr., Samuel William	U. of Illinois	MD 1947	Mayo Clinic, Rochester, Minn.
BELDING, III, Hiram Hurlburt	Northwestern U.	MD 1943	Mayo Clinic, Rochester, Minn.
BLOOM, Joseph	New York Med. College	MD 1932	Arrowhead Clinic, 5601 Grand Ave., Duluth, Minn.
COLE, J. P.	Columbia U.	MD 1944	Mayo Clinic, Rochester, Minn.
COOPER, Irving S.	George Washington U.	MD 1945	Mayo Clinic, Rochester, Minn.
DONAHOE, John Williams	Georgetown U.	MD 1943	Mayo Clinic, Rochester, Minn.
DUNCAN, Douglas Kennedy	Stanford U.	MD 1946	Mayo Clinic, Rochester, Minn.
EPPERSON, Dean Paul	Harvard U.	MD 1945	RR No. 4, Oconomowoc, Wisconsin
FITZPATRICK, Thomas Bernard	Harvard U.	MD 1945	Mayo Clinic, Rochester, Minn.

Name	*School*		*Address*
HAUCH, Edward Wray	Northwestern U.	MD 1945	Mayo Clinic, Rochester, Minn.
HILL, Wallace C.	McGill U.	MD 1943	Windom, Minn.
JOHNSON, II, Andrew Beaumont	Johns Hopkins U.	MD 1945	Mayo Clinic, Rochester, Minn.
KEATES, Albert Edward	McGill U.	MD 1944	Mayo Clinic, Rochester, Minn.
LUCAS, John Edwin	Harvard U.	MD 1943	Mayo Clinic, Rochester, Minn.
McNAUGHTON, Robert Avery	Harvard U.	MD 1945	Mayo Clinic, Rochester, Minn.
MORTON, Glenn H.	Syracuse U.	MD 1947	Mayo Clinic, Rochester, Minn.
NENNO, Robert Peter	Loyola U.	MD 1947	Veterans Administration Hospital, Minneapolis, Minn.
PEABODY, Jr., Homer David	Columbia U.	MD 1944	Mayo Clinic, Rochester, Minn.
RANDALL, Raymond Victor	Harvard U.	MD 1945	Mayo Clinic, Rochester, Minn.
RAYMAN, Mortimer Solon	Columbia U.	MD 1944	Two Harbors, Minn.
SCHAEFFER, William Andrew	Harvard U.	MD 1944	2805 Georgia Ave., St. Louis Park, Minn.
SNIVELY, George Gottshall	U. of Pennsylvania	MD 1945	P-62 University Village, 29th and Como Ave. S. E., Minneapolis, Minn.
WINBURN, Jr., James Randall	Columbia U.	MD 1944	Mayo Clinic, Rochester, Minn.

BRITISH MEDICAL TRAGEDY

The tragedy which has befallen the British medical profession under socialization offers a clear lesson on the dangers of government medicine to the United States, Warren H. Cole, M.D., a leading surgeon and a faculty member at the University of Illinois College of Medicine said in an address before the Employes' Benefit Association in Chicago, November 10, 1948.

Dr. Cole recently returned from a three-month stay in England as a member of an American Department of State medical mission. He made a thorough study of the effect of the new National Health Service Act during his work there.

"Any advantage that might be put forward to justify the operation of medical service by government is immediately neutralized by the fact that the quality of medical care promptly nosedives," Dr. Cole said. "There are several reasons why that happens."

"First, the number of office visits increases tremendously. That has already happened in England since the NHSA went into effect last July. Since doctors are already overwhelmed by present demands on their time, they obviously do not have time to examine all patients thoroughly. Unfortunately, the patient who makes the loudest complaint will be most likely to receive attention.

"Again, the doctor has no incentive to do good work. There is no financial reward in sight, and the stimulus of competition is eliminated. Even Russia realizes the value of competition in medicine.

"A third factor is that, when patients, thinking they are not paying for medical care, crowd the doctor's time with troubles they would otherwise disregard, the doctor becomes disgusted with practice and becomes lax in his vigilance for serious disease.

"Fourth, most doctors are unhappy and dissatisfied with socialized medicine, with resultant deterioration in their efforts. It is impossible to get good service from such doctors."

Another important and tragic result of socialization, Dr. Cole said, is the destruction of the doctor-patient relationship. Since the doctor has no incentive and is too busy anyway, he will not take the time to talk to a patient about his problems, especially those emotional and mental intangibles which affect health, but cannot be quickly identified as physical symptoms can.

Under government medicine, too, Dr. Cole continued, the patient in England has little choice of doctors. He can only ask for a specific doctor if that doctor's panel is not full.

Government's confiscation of hospitals in Britain destroys community interest in the institution, Dr. Cole said, while the increased demand for hospital beds by undeserving patients makes it more difficult for really sick persons to be accepted as patients.

Government medicine, aside from its evil effects, is not necessary in the United States, Dr. Cole said, though some form of compulsory medicine is part of the program of President Truman.

SELECTIVE SERVICE AND THE MEDICAL PROFESSION

(Continued from Page 1349)

the help of Army medical technicians. The Army has established a standard price for the services of the civilian doctor employed which consists of a maximum of $25.00 a day, or if more economical for the Army, $5.00 for a single examination, plus $2.00 for each additional examination on the same day. Fees for chest x-rays with interpretations are $5.00; without interpretation, $3.00. Interpretation of radiograph by a radiologist is paid for at the same rate of $25.00 a day, or $2.00 per film.

Should evidence of need for an examination by a psychiatrist become evident in the physical examination, a special neuropsychiatric examination is made. Psychiatrists are allowed $25.00 a day.

The Minnesota State Department of Health makes the serology examination.

Superficial physical inspections are made at the time of induction, which is never less than twenty-one days after the pre-induction examination. These inspections are also made by civilian physicians who receive compensation if not over $25.00 per day, or at the rate of $1.00 per man.

It is the desire of the United States Government to utilize civilian doctors to the fullest extent in the examination of inductees, in order to keep at a minimum the need for doctors in the armed forces. Doctors and qualified psychiatrists are urged to offer their services to the Recruiting Centers.

In Memoriam

JENNINGS CRAWFORD LITZENBERG

An Appreciation



With the death of Dr. Jennings Crawford Litzenberg on August 15 of this year, one of the most illustrious careers in the history of Minnesota came to an end. A career distinguished by a long tenure of forceful teaching, eminent through service as a practicing physician in his community, and marked for its prominence in local, state, and national medical societies.

Dr. Litzenberg was born in Waubeek, Iowa, on April 6, 1870. When he was six years old, his father moved the family to Anamosa, Iowa, because the larger community promised greater opportunities in the practice of law. He was a fifth generation American on both his paternal and maternal sides. Both of his great great grandfathers fought in the Colonial Army during the American Revolution. His paternal ancestors came from Hanover, Germany, in 1700, and those from the maternal side (Crawford) arrived from Scotland, in 1730. In the succession of generations to follow, his family tree acquired Scotch Irish, English and Welsh graftings, so that with a characteristic witticism he could describe himself as, "A product of the American melting pot, in animal breeding parlance, a mongrel." Following the death of his father in 1890, at which time he had completed his primary education, Dr. Litzenberg and his mother moved to Minneapolis, Minnesota. In the autumn of that year he enrolled in the University of Minnesota, beginning a connection which lasted actively until 1938, when he retired from the Chair of Professor and Chief of the Department of Obstetrics and Gynecology, though he remained as Professor Emeritus until his death.

Dr. Litzenberg's intention upon entering the University was to follow his father's profession of law. However, in his second year, probably through the influence of three physician uncles, he switched from the classical course to the scientific, as a prerequisite for the study of medicine.

To envisage Hon. J. C. Litzenberg in the role of attorney and the station which his vigorous zeal, forthrightness and amity would have earned him, makes an interesting and fascinating conjecture.

After his graduation from the scientific course in 1894, insufficient funds prevented him from entering the Medical School immediately. He obtained the position of Superintendent of Schools in St. Louis Park, a suburb of Minneapolis, where he spent the next year. Then, through a fortunate turn of affairs, he was appointed the Educational Director of the Evening Schools of the Minneapolis Y.M.C.A., with a salary sufficient to provide for his matriculation in the Medical School. He retained this post for three years, during the last of which he acted as interim General Secretary. At the Y.M.C.A. he met the late Dr. L. J. Cooke, the Physical Director, who was shortly to be chosen by the Board of Regents as the Director of the University of Minnesota Gymnasium.

Upon accepting his appointment Dr. Cooke chose Dr. Litzenberg as an assistant, a position that he occupied for the next ten years. Such a background undoubtedly was the source of an interest in young men, athletics, and teaching, that he so vitally retained until the end: an interest, which was commensurate in vigor with the tremendous expansion of the University and the community. No man in the history of the Institution had such a prolonged prestige as was his. "Minnesota! Hail to Thee!" intoned in the beauty and the solemnity of a pipe organ, at his last rites, was the symbol of his life, so deeply and widely dedicated.

After receiving his medical degree in 1899, Dr. Litzenberg spent the next year as an intern in the Minneapolis General Hospital. It can be pointed out that considering the period and the locality, his formal education was far beyond the usual and accepted standard. At that time there were no required premedical courses. Nearly all of the students entered the Medical School directly from high school.

In 1900, he opened an office in Minneapolis where "I practiced more Economy than Medicine for a couple of years." At about this time he made his first formal appearance as a teacher in the Medical School as an assistant in Ophthalmology and Otology. He did not reveal what turned his interest, but in 1902 he became a Clinical Instructor in Obstetrics, the field in which he ever after remained pre-eminent.

In 1902, he married Elizabeth Fisher, of the Class of 1898, University of Minnesota. She bore him two children: Karl, now a Professor of English at the University of Michigan, and Avis, now Mrs. Chauncey G. Chase, residing in Minneapolis. This son and daughter have in turn become the parents of five grandchildren concerning whom, contrary to his usual reserve, there was no concealment of his pride. Photographs were reasonably available at all times with appropriate explanations as to each youngster's extraordinary characteristics.

"Liz" and "Litz" quickly became the emblem of the completely happy marriage. For his ideals she willingly sacrificed the added comforts that a greater continuity of practice could have brought to their home, and in return he eagerly embraced her ideals in the spiritual realm of church, music, and the home.

In 1907, after five years of service as an instructor

in obstetrics, Dr. Litzenberg was promoted to the rank of Assistant Professor. During this period, he and Mrs. Litzenberg became aware that further preparation was needed in order to aid the advancement of thinking in obstetrics and gynecology in the community. Consequently, in 1909, accompanied by their children, they departed for Vienna, where he studied under the great Dr. Schauta for two years, the latter of which was spent working intensively as a voluntary assistant. Upon his return to Minneapolis and the University he was made an Associate Professor in Obstetrics and Gynecology, an appointment that marked the first recognition by the University Medical School of the intimate relationship of these two subjects, and from this time the two have been taught together.

In 1913, Dr. George Edgar Vincent, the President of the University of Minnesota, who later became the Head of the Rockefeller Institute, shook the Medical School to its foundation by calling for the resignation of the entire faculty of the Medical School. He had a real conviction that the medical faculty was too large, contained too many general practitioners and too few trained teachers and investigators. In the subsequent reorganization of the Medical Faculty under Dean Westbrook, Dr. Litzenberg was invited to become the Professor and Chief of the Department of Obstetrics and Gynecology.

The appointment pleased him, but he always declared that it astonished him. However, where was there another with the foresight and the fortitude to prepare so diligently for an inevitable development? His ancestors first came to Pennsylvania, from whence they moved into Ohio, later advancing into Iowa. Was he through his heritage of expansion and pioneering not made sensitive to the potentialities of his environment? A community that during his lifetime increased tremendously in population and developed astoundingly in progress and culture.

Following the acceptance of his appointment he almost immediately returned to Europe for another year of study under Dr. Schauta in Vienna, and Dr. Bumm in Berlin. In his reminiscences he jokingly contrasted his first stay in Europe as a student with his later visit as a Professor—Hoch Professor—a status which required formal clothes, a silk hat and the appendage of a gold-headed cane.

Following his second return from Europe, Dr. Litzenberg undertook at once his teaching duties and the rebuilding of his private practice. At this time the Medical School of the University of Minnesota was, except for the University of Iowa, in the unique position of having the only complete medical course in what was then known as the Northwest States; a station which made it the center of influence not only in Minnesoa, but in the Dakotas, Montana, and considerable portions of Iowa and Wisconsin.

In 1927, when Dr. Litzenberg had reached the height of his career, an eminence which was shared mutually in the tradition of Christian marriage, Elizabeth Litzenberg died. To him this was nearly a catastrophic event. But, after the first shock, in which everything in life seemed to be gone, his measure of a man was exhibited. To their ideal, self was subjugated, and he strove alone toward their mutual goal as a living monument to honor the one who had meant the most to him.

His enthusiasm, force and clarity soon made Dr. Litzenberg one of the most sought-after medical speakers in this large area. In spite of the demands of his private practice and the duties of his formal teaching obligations, he accepted the invitations with remarkable buoyancy. To most men, the activities of practice, teaching, and speaking would have been sufficient to completely fill their lives, but to him it was not enough. He energetically undertook and accomplished creditable researches. To mention only some of them—he was the first to study the relationship between hypothyroidism and fertility; he made classical contributions to the understanding of tubal pregnancy; he interested himself in the problem of tuberculosis during pregnancy in his capacity of obstetrical consultant to the Glen Lake Sanatorium; and he studied the leukocytes in pregnancy. His bibliography, while not as large as those of some of his contemporaries, contained a quality of writing which was meditative, conservative, precise, forceful, and, on occasions, clairvoyant. His last major work was the volume, "Synopsis of Obstetrics," C. V. Mosby and Co., which he published in 1940 and which was re-edited in 1943.

It was not long before Dr. Litzenberg became the most prominent private practitioner in Minneapolis. He was devoted to his patients and, in turn, he was held in reverence by them. Simultaneously, he became a favorite consultant. To those with whom he consulted he was considerate and tactful. He was held in esteem as a consultant because of the respect he constantly exhibited for his conferee.

During World War I there were instances when he took over the care of the patient of a colleague who had entered the armed services. Upon completion of the case the fee was sent to the wife of the colleague. The occasions on which he assumed or shared the responsibility of the care of the relative of a colleague are innumerable. In 1920, he joined with a group of distinguished associates, all of whom held high positions on the teaching staff of the University Medical School, to form the Nicollet Clinic, an organization in which he remained active until shortly before his death. During World War II he sacrificed a life of semi-retirement to actively conduct the work of the Department of Obstetrics and Gynecology in the Clinic.

It was never obvious which gave Dr. Litzenberg the more gratification, his life as a practitioner with its multiple and varied contacts, or the activities of his academic life. In perspective, in his era when few if any academic-clinical careers existed, were they meant to be separated? Rather, was it not an integrated whole? Was the effect and force of his teaching not conditioned by an appreciation of the problems of the private practitioner gained through his own experience, and conversely, was his capability as a practitioner not enhanced by the stimulation he received through teaching and investigation? In these questions may be the answer to the conflict of ideas in the medical educational methods of today. Is the teaching of medicine

to be removed farther and farther from its practice through augmenting every department with more solely academic careers in which the present clinical academician ostensibly has his greatest interest, or are the teaching and practice of medicine to be component parts of a well-rounded whole?

Dr. Litzenberg's description of the four phases of a trend in medicine may be applicable. "First, there is the beginning or discovery of an idea. Secondly comes the phase of exploitation of the idea. Thirdly, there is a recession from the inevitable overexploitation of the idea, and finally there is the achievement of balance." May his life not represent the achievement of balance in medical education, however premature it was to the present time when many think that clinical-academic careers are overemphasized?

At the time Dr. Litzenberg ascended to the chair of obstetrics and gynecology, teaching was entirely for the benefit of the undergraduates, nearly all of whom expected to serve as practitioners in those parts of the community which the Medical School influenced. There were no residents. Internships were not a necessary requirement for the degree of M.D. until as late as 1920. Graduate study was undertaken almost entirely in Europe, especially Germany. Soon after its reorganization in 1913 the Medical School of Minnesota developed and adopted a system of Teaching Fellowships in order that graduate study in the various fields of medicine and surgery would be available in this country. Graduate students were required to take didactic courses; to perform supervised clinical work; to participate in teaching; and, in the end, to present a research thesis, the satisfactory completion of which led to the conferment of a Ph.D. degree. This was an innovation in medical graduate study in America and in its development Dr. Litzenberg played no small part. About a dozen men received their training in obstetrics and gynecology through this system while he occupied the chair. Of these, some have extended the impact of his teaching force as formal teachers in distant places; but the others have remained as specialist practitioners, teaching more indirectly through example and consultation.

The reduction in the maternal mortality rate may be the best expression of Dr. Litzenberg's strong influence in this community. At the time he accepted the chair of obstetrics and gynecology, the maternal mortality rate in Minnesota, although one of the lowest in the country, was almost 7 per 1000 live births. From here on there was an almost yearly decline in this mortality rate. In 1930 a marked diminution of the maternal mortality rate was noted, not only in Minnesota but in the adjacent states. That the influence of his powerful teaching was largely responsible for the decline is unquestionable, because it is estimated that by 1930, about one half of the practitioners in this area had been his students. Their handling of obstetrical problems must be considered as one of the major factors in this sharp lowering of the maternal mortality rate. The phenomenon has continued until Minnesota, in 1947, can boast of a record of 0.6 maternal deaths per 1000 live births, the lowest ever recorded in the country, if not the world. Although there are many other elements concerned with the lowering of maternal mortality rates, the effect on it by Dr. Litzenberg as an individual was made real through his medium of advanced training; by his cogent undergraduate teaching; through the instruction he gave as an indefatigable medical speaker; and by his ready willingness to aid a colleague.

While at first he took pride in the declining maternal mortality rates, he later became sensitive to the commendation given him for it. He was constrained to write: "Those interested in saving mothers said that the first thing to be done was to improve obstetric teaching. I gave my teaching life to this problem. Good teaching, however, was not the only factor. My staff was a unit in all-out endeavor to turn out young doctors constantly conscious of the possibility of saving mothers. I have been given too much personal credit for the improved teaching of obstetrics and gynecology in our Medical School. My staff deserves most of the credit, for all members were in accord in a determined effort to improve the teaching."

No more need be mentioned about Dr. Litzenberg's influence in this community except that it quickly drew national notice. In 1915 he was made a member of the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, an organization that he served as president in 1933-34. In 1916 he was elected a Fellow of the American Gynecological Society. Twenty-five years later he was agreeably surprised by his election to this society's presidency. In the preceding year the Central Association of Obstetricians and Gynecologists saw fit to honor him by electing him its president. In 1927 he served as the chairman of the Section of Obstetrics and Gynecology in the American Medical Association.

In 1920 he was chosen as a member of a small committee of obstetricians and gynecologists to consider the establishment of an American Board of Obstetrics and Gynecology. This was prompted by a growing agitation in the medical profession, as a whole, for some method to identify the trained specialist, because the increase in the number of psuedospecialists who professed specialization not only in one field but in multiple fields had become alarming. In 1930, after ten years of careful study and investigation, this committee established the American Board of Obstetrics and Gynecology, one of the first of the various examining boards to come into existence. Dr. Litzenberg was elected to the board of nine as one of the three members from the American Gynecological Society, a post he retained until his resignation, in 1940.

Few men in the history of obstetrics and gynecology in this country have achieved such wide distinction or have been so signally honored by their confreres. He was truly our "giant of the North."

The attitude of those in his immediate community was shown by his election to the presidency of the Hennepin County Medical Society in 1918, and to the presidency of the Minnesota Academy of Medicine in 1932. In 1937, he was elected to the presidency of the Minnesota Obstetrical and Gynecological Society. The satisfaction he experienced from these choices was

as poignant as when he was honored by the national societies, and is best expressed in his following words, "I have prized these honors because they came from my home societies where the members knew my faults."

is Dr. Olga Hansen until six o'clock P.M. when she becomes Mrs. Litzenberg." Before long they were known simply as Olga and Litz. They shared their love and esteem with the families and friends of each,

UNIVERSITY OF MINNESOTA

TO

JENNINGS CRAWFORD LITZENBERG

IN RECOGNITION OF YOUR LONG AND DISTINGUISHED SERVICE TO THE UNIVERSITY OF MINNESOTA AND TO THE STATE, THE SENATE OF THE UNIVERSITY, THE PRESIDENT AND THE BOARD OF REGENTS PRESENT THIS CERTIFICATE AND EXPRESS THEIR GRATITUDE, ESTEEM AND AFFECTION YOUR NAME IS ALREADY ON THE ROLL OF HONOR OF THOSE WHO AS TEACHERS AND ADMINISTRATORS HAVE CONTRIBUTED TO THE DEVELOPMENT OF A GREAT UNIVERSITY HAVE ENRICHED THE LIVES OF COUNTLESS STUDENTS AND THROUGH THEM THE LIFE OF THE COMMONWEALTH YOU HAVE SERVED THE UNIVERSITY NOTABLY AND WELL AS



ASSISTANT PHYSICAL DIRECTOR	1897 TO 1907
ASSISTANT IN OPHTHALMOLOGY AND OTOLOGY	1900 TO 1902
CLINICAL INSTRUCTOR IN OBSTETRICS	1902 TO 1906
CLINICAL PROFESSOR OF OBSTETRICS	1906 TO 1910
ASSOCIATE PROFESSOR OF OBSTETRICS AND GYNECOLOGY	1910 TO 1913
PROFESSOR OF OBSTETRICS AND GYNECOLOGY AND HEAD OF DEPARTMENT	1913 TO 1938

L. D. Coffman PRESIDENT M. Nimocks SECRETARY

GIVEN IN MINNEAPOLIS IN THE STATE OF MINNESOTA THE THIRTEENTH DAY OF JUNE IN THE YEAR OF OUR LORD ONE THOUSAND NINE HUNDRED AND THIRTY-EIGHT

He was honored by membership in the Sigma Xi and Alpha Omega Alpha honorary fraternities.

However, the high point of the esteem in which he was held locally was expressed on the occasion of the appreciation dinner given for him upon his retirement from the chair in 1938. In all, about 250 physicians, all his immediate colleagues, attended this testimonial of their love and respect. In addition to an oil portrait painted by Edward Brewer, which was presented to the University and which still hangs in his former department, there were many messages of commendation. Of these, the one from President Vincent, the Head of the Rockefeller Institute, is the most expressive and important. "I think of you with pleasure and gratitude. You were always calm, wise, humorous, and a steadying influence. You had ideals of research, teaching, and organization, to which you were steadfastly loyal. In times of stress and strain you kept your head and your temper. You will carry with you the assurance that you have played an important part in making the University of Minnesota Medical School one of the best in the country."

In 1934, Dr. Litzenberg and Dr. Olga Hansen, a member of the Department of Medicine of the Nicollet Clinic, astonished many of their friends by a quiet marriage. The amazement was soon replaced by pleasure, however, as the compatability and devotion of the two became apparent. Each followed his or her respective careers in medicine and when the inevitable confusion of names took place they facetiously stated, "It just as each was the recipient of the affection and regard of the other's friends and families.

The concern of Dr. Litzenberg for the young man was shared by Dr. Olga. Because of the dearth of rooming facilities in the region of the University, they opened their spacious and comfortable home, located on the margin of the campus, to a number of students each year. The depth of the meaning which attended the privilege of this hospitality is best expressed in the words of one of those who benefited from it: "In many respects he meant more to me than my own father; certainly he opened vistas which would have been denied me had I not been privileged to make my home with him for four precious years. He helped instrumentally to set the pattern for my own life, and as with me so it was with many others fortunate enough to have come under his guidance. There are many like myself who, as they undertake their responsibilities of parenthood or preceptorship, will seek to perpetuate that spirit of integrity, good humor, generosity, reverence, and grace, of which he was such a rare embodiment."

What more could be said by one who is not in the realm of science, but who has achieved success in a field far removed?

No biographical sketch of Dr. Litzenberg, however short or long, could be finished without a eulogy to the devotion given to him by Dr. Olga Hansen Litzenberg; a devotion which, when the inevitable physical infirmities overtook him, grew progressively in proportion as

the infirmities increased. She accompanied him to medical meetings in which he retained a lively interest until the very end, often at considerable distances. In the last years of the recent war when he carried a load of work far beyond the capacity of most men of his years, she accompanied him when he responded to night calls from the hospital. In the home she was constantly solicitous of his comforts and pleasures. In spite of her own heavy burden of professional work she found time to arrange and attend social functions which he also enjoyed until the time of his death. Only a few can completely and selflessly accept the privilege of service and devotion. Of these few Dr. Olga Hansen Litzenberg is one.

The record of the attainments and achievements of a man is only an appraisal of his abilities. The real appreciation of a man can come only through contacts with the multiple facets of his character. To know Dr. Litzenberg was to love him! To know him more intimately by working under his guidance was to cherish him still more. He was humble about his own accomplishments, but he was openly proud when some degree of success or any mark of distinction came to any in whose lives he had had some influence. Likewise, he was hurt and sorrowful when some one of these met with adversity.

It is not unusual that his Fellows held him affectionately in regard as the Chief and that he was devoted to them as "his boys." Such is the tradition of the teacher and student. But, it is unusual that he welcomed and applauded the inroads they made into his personal interests as they expanded as practitioners. He was always helpful. His interest in the potential accomplishments of those he met wherever he went and the stimulation and aid he gave to them established him as the Chief to many who had not trained directly under him. One of these living in a city far removed could write, "I first met the Chief in Washington in 1922. Since then he has been a professional father to me. His friends understood that I was one of "his boys." I can't express how much "My boy" has meant to me all over the United States."

The Head of the Department of Obstetrics and Gynecology in the Medical School of a well known University wrote the following. "He was always intelligent and kind and never too busy to help us in the young days of our clinic here." Many similar expressions of gratitude came from all parts of the country at the time of his death.

It was natural that Dr. Litzenberg, should be called "Litz" and sometimes "Litzie." In his daily life he was seldom addressed as Dr. Litzenberg. If one who knew him was in a distant place, and queries were made about various members of the local medical personages, almost invariably the first question asked was "How's Litz?" If others were asked about first, inevitably would come, "And how's Litzie?" He seemed to enjoy this abbreviation of his name and well he could because in it there was a connotation of affection and esteem. It could not violate the simple dignity that he was never without.

Courtesy was an inherent quality of the Chief, but during the period of the multiple demands of his most active life he could be brusque. If one were hurt by this paradox in his character, it did not last. With the next meeting complete assuagement came in his hearty and gracious salutation. On rare occasions he could be rude. He was repeatedly and openly boorish to a contemporary whose hidden principles he detested and which he had detected much earlier than had others. These incivilities were born of an outraged sense of propriety and were intolerable in his own straight and unpretentious way of thinking. He lived with a deep consciousness of the meaning of integrity.

Another of his inherent qualities was affability, but a violation of his deep sense of justice could produce strong indignation. At times he could forcefully voice his disapproval, but usually he contained himself in a significant silence. He could be highly tolerant of an error. On the other hand, a mistake, which to him implied omission, was inexcusable. Yet, whether in condemnation or in approbation, he was kindly.

He possessed a multiplicity of interests that could take him from the highest science of the lecture hall to an almost uninterrupted record of attendance at football games through many years. In his last years one would find him leaving the comfort of a warm home on a cold winter night to attend a lecture on some advanced scientific subject. On a Saturday when the short walk to the stadium had become a definite physical effort, he would brave the rigorous autumn weather to attend a football game. He challenged age to interfere with his participation.

He could discuss many subjects, some with brilliance and others always with competence. Yet he would never indulge in controversial topics. He appreciated a good story, but he was cold to "off color" yarns. He had wit, a faculty which made him a master of repartee in his earlier years. In his later years, as it was said of him in the Jennings C. Litzenberg Memorial Lecture, he had a chuckle which answered much.

The Chief is gone! To us who sat at his feet there can be no other Chief. He lighted a torch which we have striven to carry. He personified a great and rapid growth in obstetrics and gynecology. Through the medium of his own idealism he represented an ideal. He was Litzenberg—jocularly translated from German into English by himself—"A Light in the Mountains." *A bright light on a lofty height!*

CLAUDE J. EHRENBERG.

LEROY EDSON DOOLITTLE

Dr. LeRoy E. Doolittle, a well-known pediatrician of Duluth, died November 9, 1948, following a two weeks' illness.

Born in Genesco, Illinois, on March 8, 1883, Dr. Doolittle received his B.A. degree from the University of Minnesota in 1905 and his M.D. degree in 1909. In March, 1911, he married Bessie Kent.

After serving as a captain in the Medical Corps of the Army during World War I, he served as resident physician at the Children's Hospital in Boston from 1918 to 1920. He then located in Duluth and was medi-

cal superintendent of public schools for two years. His specialty was pediatrics and he was chief of pediatrics at St. Mary's Hospital in 1933.

Dr. Doolittle was a member of Phi Beta Pi medical fraternity, the Northwest Pediatric Society, the Central States Pediatric Society, the Academy of Pediatrics, the St. Louis County Medical Society and the Minnesota State and American Medical Associations. He was also a member of the Pilgrim Congregational Church, the Duluth Chamber of Commerce, and the Rotary Club.

Surviving are his widow; a daughter, Mrs. R. J. Hopkins of Duluth; three grandchildren, and a brother, Herbert E. Doolittle of Sioux Falls, South Dakota.

GEORGE BOODY

Dr. George Boody of Saint Paul passed away on November 11, 1948, at the age of ninety-three.

Born in Iowa, Dr. Boody practiced medicine in Iowa, Kansas, Alaska, Illinois, North Dakota and Texas before coming to Saint Paul thirty years ago.

Dr. Boody is survived by his wife; two sons, Hurd Boody of Saint Paul, and Dr. George Boody, Jr., of Dawson, Minnesota; a grandson; and a brother, Dr. Frank Boody of Eldora, Iowa.

FRANCIS E. GRISWOLD

Dr. Francis E. Griswold, a practicing physician at Hoffman, Minnesota, from 1899 until he retired from active practice two years ago, died November 1, 1948. He was seventy-four years old.

Dr. Griswold was born in Wisconsin Rapids, Wisconsin, March 21, 1874. He graduated from the University of Minnesota medical school in 1897 and took postgraduate work at the Post Graduate Polyclinic at Chicago in 1910.

Dr. Griswold is survived by his wife, Myra, two sons, Eugene F., of Minneapolis, and Myron W., of Crosby, Minnesota, and a daughter, Mrs. W. E. Clark of Minneapolis.

WILLIAM C. GULDE

Dr. William C. Gulde of St. Cloud died suddenly on October 28, 1948.

Dr. Gulde was born January 27, 1881, in Marshalltown, Iowa. He studied at Notre Dame University and graduated from Drake University medical school in 1907. He practiced at Bancroft, Iowa, before moving to St. Cloud.

He specialized in eye, ear, nose and throat diseases and was a member of the Stearns-Benton Medical Society, the Minnesota State and American Medical Associations. He is survived by his wife and a brother, Joseph F. Gulde, of St. Cloud.

JACOB ARTHUR JOHNSON

Dr. J. Arthur Johnson, of Saint Paul, died November 10, 1948, at the age of fifty-four.

Dr. Johnson was born December 20, 1893, in Saint Paul. He received his preliminary education at Minnesota College, and the degrees of B.S., M.B. and M.D. from the University of Minnesota in 1928. After graduation he interned at Ancker Hospital and served as resident at Mounds Park for six months. He was awarded the honorary degree of Alpha Omega Alpha as an undergraduate in medical school.

He was a member of the Gustavus Adolphus Lutheran Church, where he served as deacon for six years, and was in charge of compiling historical data for the anniversary book published on the fiftieth anniversary of the church. He was a member of the Ramsey County Medical Society, the Minnesota State and American Medical Associations. Unmarried, Dr. Johnson is survived by a sister, Mrs. Walfred G. Rohr of Saint Paul, and two nieces.

EARL F. JAMIESON

Dr. Earl F. Jamieson, of Brainerd, died suddenly of a heart attack on October 19, 1948, at the age of sixty-one.

Dr. Jamieson obtained his M.D. degree from the College of Physicians and Surgeons, Boston, in 1911, and specialized in eye, ear, nose and throat diseases.

He was a member of the Upper Mississippi Medical Society, the Minnesota State and American Medical Associations.

GARDNER SHAW REYNOLDS

Dr. Gardner S. Reynolds died in Saint Paul, October 16, 1948, at the age of fifty.

Dr. Reynolds graduated from the University of Minnesota Medical School in 1924 and practiced at Eau Claire, Wisconsin. He joined the staff of the Henry Ford Hospital, Detroit, in 1927. Later he became head of the x-ray department of St. Elizabeth's hospital, Danville, Illinois, until his resignation last April because of ill health.

Dr. Reynolds is survived by his wife, a son, Thomas, his mother, Mrs. Mae Reynolds, of Saint Paul, two sisters and a brother.

ALPHONSE E. WALCH

Dr. A. E. Walch of Minneapolis died November 14, 1948.

He was born in Rollingstone, Minnesota, February 19, 1907. He graduated from St. Mary's College, Winona, in 1929 and obtained his M.D. degree from St. Louis University Medical School in 1933. After interning at the St. Louis University Hospital, he took postgraduate training at the Minneapolis General Hospital from 1934 to 1936.

Dr. Walch was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, and was Clinical Assistant Professor of Medicine at the University of Minnesota medical school.

He is survived by his wife, Helen, a son and four daughters. His parents, Mr. and Mrs. Francis F. Walch of Rollingstone, and a brother, Ralph A. Walch of Le Sueur, also survive him.

Reports and Announcements

CHICAGO MEDICAL SOCIETY

The fifth annual Clinical Conference of the Chicago Medical Society will be held in Chicago at the Palmer House, March 1, 2, 3, and 4, 1949. The scientific program promises to be most outstanding with well-known speakers from all sections of the country discussing subjects which will be of interest to all physicians. Many scientific exhibits are being planned and the technical exhibits will be well displayed. Sufficient time will be given for viewing both of these exhibits.

One of the interesting features of the conference will be the luncheon round tables when questions will be answered by the speakers.

Physicians of other states and cities are cordially invited to attend this important medical meeting. Reservations should be made direct with the Palmer House.

UNIVERSITY COURSES IN OBSTETRICS AND OPHTHALMOLOGY

The University of Minnesota announces a three-day course in obstetrics for general physicians to be given at the Center for Continuation Study, January 6 through 8, 1949.

The University of Minnesota announces a one-week course in ophthalmology to be given at the Center for Continuation Study. The course is designed for ophthalmologists and will be presented during the week of January 24 through 29, 1949.

E. STARR JUDD LECTURE

The sixteenth E. Starr Judd Lecture will be given by Dr. Alton Ochsner, William Henderson Professor of Surgery at the Tulane University, New Orleans, Louisiana, Tuesday evening, January 18, 1949, at 8:15 in the Auditorium of the Museum of Natural History. Doctor Ochsner's subject is "The Treatment of Postphlebitic Sequelae by Vasodilatation and Other Measures."

The late E. Starr Judd, an alumnus of the Medical School of the University of Minnesota, established this annual lectureship in Surgery a few years before his death.

FREEBORN COUNTY SOCIETY

The Freeborn County Medical Society held a meeting in Albert Lea on November 4, and members heard a discussion of cancer by two University of Minnesota physicians. Dr. Arnold Kremen, of the cancer service of the University, spoke on cancer of the mouth and lips, while Dr. Robert A. Huseby, assistant professor of cancer biology, spoke on carcinoma of the breast.

During a business session, the Society selected Dr. F. W. Calhoun of Albert Lea as the outstanding general practitioner of the year from Freeborn County and voted to submit his name for the state nomination for the annual AMA award. Dr. Calhoun has practiced medicine for forty-one years.

SOUTHWESTERN MINNESOTA SOCIETY

At the annual meeting of the Southwestern Minnesota Medical Society, held in Worthington on November 1, Dr. John Lowman of Pipestone was elected president of the organization. Other officers named were Dr. Gerrit Beckering, Edgerton, president-elect; Dr. C. J. Pankratz, Mountain Lake, vice president; and Dr. B. O. Mork, Jr., Worthington, secretary-treasurer.

The principal speaker of the meeting was Dr. T. R. Fritsche, New Ulm, who presented an illustrated lecture on diseases of the eye.

The Society selected Dr. Ludwig L. Sogge, Windom, to be nominated for the honor of outstanding general practitioner in Minnesota.

WASHINGTON COUNTY SOCIETY

At a meeting of the Washington County Medical Society in Stillwater on November 9, the principal speaker for the evening was Dr. W. H. Thompson of Minneapolis. Dr. Thompson spoke on "Congenital Disease of the Hip" and illustrated his talk with numerous x-ray films.

PRACTICAL NURSE EXAMINATION

The Minnesota State Board of Examiners of Nurses will hold an examination for those applying for licenses to practice as Licensed Practical Nurses on Saturday, February 19, 1949, at 9:00 A.M. in the Mechanic Arts High School Auditorium, Saint Paul.

Completed applications for this examination accompanied by the fee of $7.50 must be in the office of the State Board of Examiners of Nurses, 222 Minnesota Building, Saint Paul 1, Minnesota, by January 19, 1949.

Fees must be paid by money order or bank draft; personal checks or cash will not be accepted.

Application blanks may be obtained from the board office.

CIVIL SERVICE POSITIONS FOR LABORATORY TECHNICIANS

Openings for medical laboratory technicians for positions for the most part in state institutions, are announced by the State Civil Service. Salaries range from $224 to $264 a month, and housing and board are obtainable at the institutions at a nominal cost.

Applications should be sent to the State Civil Service, Room 122, at the State Office Building, Saint Paul, Minnesota, before December 28, 1948. Examination will be held on January 8, 1949.



The inactivity following surgery or disease, and often encountered in the aged, makes constipation a likely occurrence. Dehydration, too, frequently is a significant contributing factor.

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RESEARCH IN THE SERVICE OF MEDICINE

SEARLE

Woman's Auxiliary

A PUBLIC RELATIONS PROGRAM FOR COUNTY AUXILIARIES

L. W. REMBER

Executive Assistant, American Medical Association

AS A NOUN, Webster says, "Auxiliary means a helper; an assistant." As an adjective, it means "in a helping manner." This is public relations in its finest sense; helping your doctor husbands to practice medicine in a *free* society; helping yourselves because you grow and gain great satisfaction from your achievements and contributions; helping your community get better medical care and medical services which brings it peace of mind and stamps out its fears.

Another definition which makes an excellent mental gymnastic for this morning's session is that of "Medical Public Relations."

Medical Public Relations is that function of the profession which evaluates public attitudes, identifies the policies and procedures of the profession with the public interests, and executes a program of action to earn public understanding and acceptance.

We can all agree, I believe, that this statement sounds mighty good and that the function of public relations deserves the wholehearted and continuous support of the medical profession and of the auxiliary. But this statement will only remain a group of beautiful words and noble phrases unless we translate it into action. Only action will earn public approval and public support for our goals.

It is highly commendable that your 26 county auxiliaries have already made great strides in effecting a program of action. But your being here today evidences that you are not the type of human being that is content to become mired in yesterday's achievements.

And so you have come together to expand your public relations activities and to refine your good-will-building techniques and methods.

In undertaking a program of public relations of any kind, it is necessary first to determine the nature and number of your publics. Otherwise you will not be in a strong position to serve them or to influence them.

An auxiliary to a county medical society, as I see it, has seven publics: two of them are in the area of *internal* relations and five of them are in the area of *external* relations.

Your *first* internal public is your own membership.

Your original purpose in being organized, as I understand it, was to promote companionship and sociability among wives of doctors. This is a noble public relations purpose. This association inclines you to feel kindly toward, and to speak well of, doctors' wives and of their husbands. This aids the profession.

Looking on the other side of the coin, when you speak ill of another doctor or of another doctor's wife, you injure the profession and every member of the profession, including your own husband. It is reassuring that the same charge cannot be made about doctors and doctors' wives in Minnesota, and in America generally, as was written about English doctors in explaining why they succumbed to socialized medicine.

Elizabeth Wilson is an outstanding American authority on compulsory health insurance. Recently she went to England to study first-hand why the British doctors were knocked out on July the fifth. In an appraisal letter to Dr. George F. Lull, our general manager and secretary, she said:

> It is very enlightening to see the different cliques among the doctors. I think that is the basic reason they failed—too much jealousy, too much individualism, too little co-operation. On the other hand, the government people, who are giving me quite a rush, work as one team. American doctors better take notice.

All of you fully appreciate, I'm sure, that one of the primary public relations responsibilities of auxiliary members is to cultivate and to maintain good will among the membership.

Another major membership responsibility in the area of internal relations is that of being informed about auxiliary affairs and aims; not only in reference to your own local unit, but also in reference to your state auxiliary and to your national auxiliary. Leaders particularly must keep informed. This, all of you are doing, I assume, by attending meetings regularly and by reading carefully through your local, state, and national bulletins, news letters, and special sections in the medical journal.

I might say here that this School of Instruction which you are holding here today is a splendid example of public relations indoctrination. In fact, I think it is unique, and the first I know of among state auxiliaries anywhere in the nation.

Public-relations-wise, it is important that this and all other valuable information which you acquire go beyond your own head and that it be funneled into the minds and motivations of your county auxiliary members. As Presidents, Secretaries and Committee Chairmen, you are the logical go-betweens. And if these ideas and this information do not pass on through you to them, they won't go anywhere. They'll just rust. And so might your county auxiliary!

Your *second* internal public consists of the county, state and national medical societies of which your husband is a member.

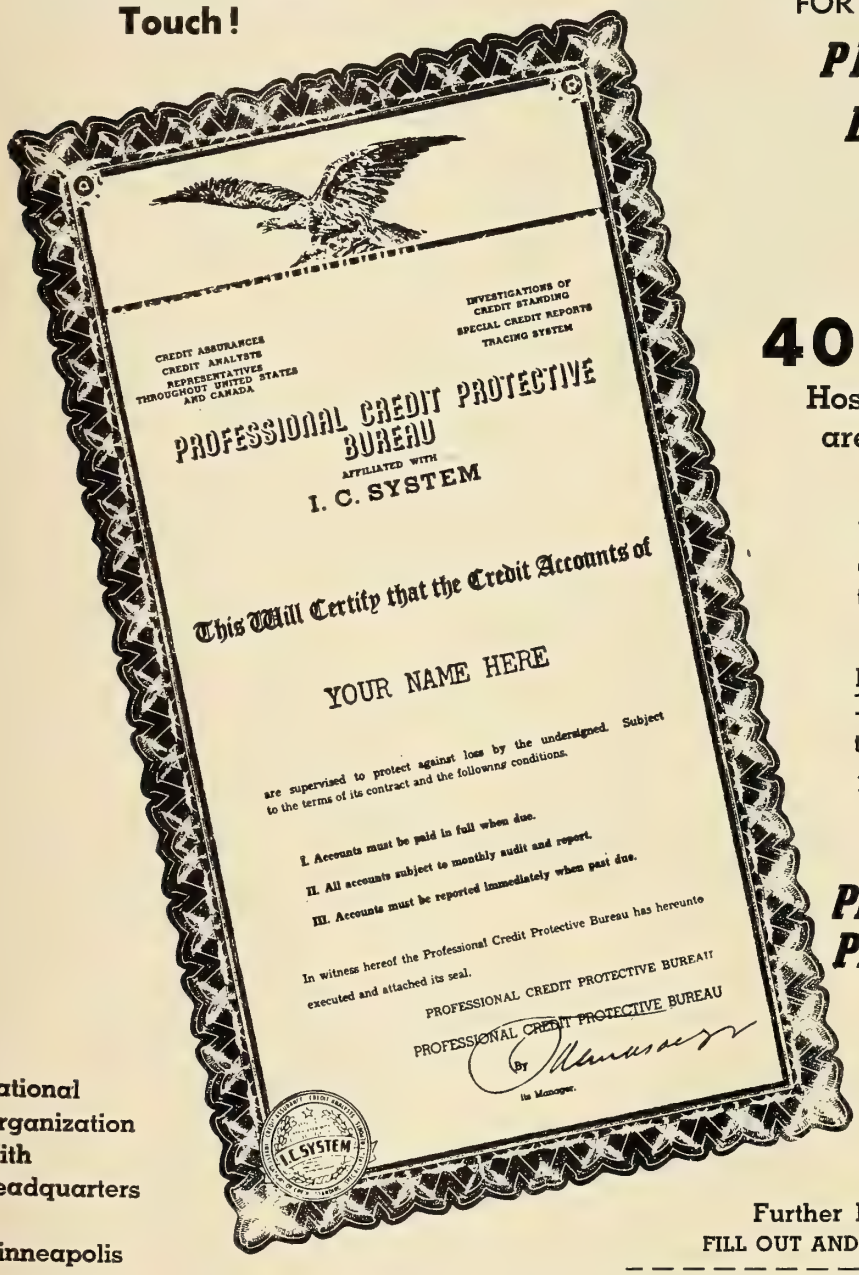
This is especially true because you have added to the original Auxiliary purpose of "promoting friendship

(Continued on Page 1370)

Delivered at the School of Instruction of the Woman's Auxiliary to the Minnesota State Medical Association, Minneapolis, Minnesota, September 24, 1948.

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(Continued from Page 1368)

and mutual understanding among members." You have become aware of the expediency and desirability of encouraging happy situations and good will among all people. And so, your public relations chairman and your entire Auxiliary are seeking ways of "building a firmer relationship between the medical profession and the public."

Sound public relations naturally requires that Auxiliary members cannot say one thing and Medical Societies another in their public utterances and in their aims. There must be unity—of goal, of expression, of action. There is ample evidence that you people in Minnesota are fully aware of this. It is obvious from the program scheduled today that the State Medical Association and your State Auxiliary are working together most closely and co-operatively.

The fact that Dr. A. E. Cardle, president, Dr. E. M. Hammes, president-elect, Dr. Reuben F. Erickson, public policy committee chairman, and Dr. Paul C. Leck, Chairman on Rural Medical Service, are all appearing on this program shows that you are functioning as a team. This indicates that you appreciate that the public relations of the medical profession is the doctor's first responsibility, and that of necessity they must guide and approve of your public relations activities.

Commendable also is the closeness with which your State Auxiliary and Mr. Rosell worked in planning and developing this splendid program of today. I can say from past experience that I know that the Executive Secretary of the Minnesota State Medical Association has an unusual understanding of what is good public relations. The teaming up of his office with your School of Instruction Committee was bound to achieve a winning public relations touchdown.

At National Headquarters, Mrs. Kice and your national Board of Directors are co-operating most smoothly and effectively with President Dr. Roscoe Sensenich, President-elect Dr. Ernest Irons, the entire Board of Trustees chairmanned by Dr. Elmer Henderson, and General Manager and Secretary Dr. Lull. Dr. Edward L. Bortz, who served as President of the AMA during the past year, made the statement in Cleveland this January that "The Auxiliary is now beginning to assume its rightful role. It represents probably our most effective instrument in the field of public relations, which, unfortunately, has been the most neglected."

Your national auxiliary secretary, Mrs. Margaret Wolfe, has her offices in the AMA headquarters and is most helpful and co-operative. This same harmony and singleness of purpose operating at your state and national levels exists, I'm sure, between your county auxiliary and your county medical society.

These then are your two internal publics: your membership; and your county, state, and national medical societies.

We have already talked about the need for being informed about auxiliary affairs and aims. It is equally necessary that we keep informed and abreast of medical society activities and objectives. President Sensenich recently stated this well when he said: "As with all physicians, the first need for the members of the Auxiliary is to keep thoroughly informed of the issues which confront us."

The Journal of the American Medical Association, your own state journal, MINNESOTA MEDICINE, and

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other medical periodicals and literature are excellent means of keeping authoritatively and currently informed.

This now brings us to the area of *external* relations, in which you, as an auxiliary to your county medical society, have five publics.

The *first* of these publics is the general public.

The medical profession has great need of the support and good will of the general public. It is the individual man and individual woman who make up the general public who will eventually by their cross on the ballot determine whether doctors are to practice under a voluntary or a compulsory system. The general public likewise through their legislative representatives will dictate what is done about animal experimentation, intrusion of third party between doctor and patient in the practice of medicine, status of medical cults, level of doctor income, amount of funds appropriated for research, education, and public health, and many other matters of vital importance to doctors and, therefore, wives of doctors.

The attitudes and opinions which members of the general public hold toward you as Mrs. Doctor will transfer itself for good or for harm to your doctor husbands. The admirable qualities of human nature such as kindness, tolerance, friendliness, and so forth will win friends. The objectionable qualities of personality such as high-hattedness, indifference, bigotry, and so forth will create enemies. In fact, whatever you say or do functions in tipping the scales one way or the other.

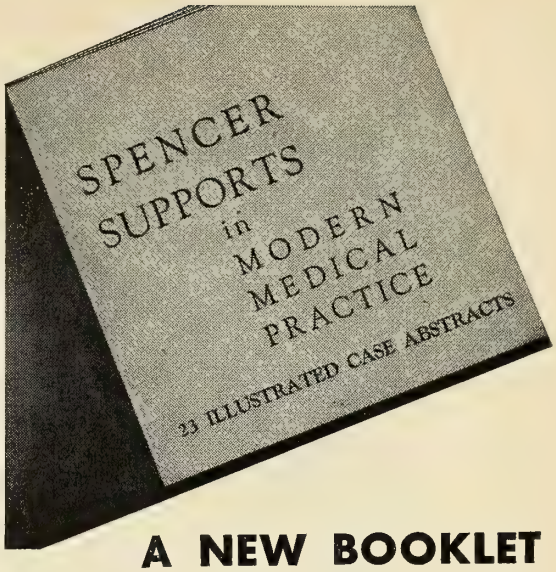
The number of people whom you will, or you can, contact individually and personally are limited, however. Consequently, it becomes necessary to seek some other means of reaching the masses, or the vast majority of people, who make up the general public.

This you can accomplish by employing the mass channels of communication and persuasion. These channels are your *second* external relations public.

They consist of your county newspapers, your county radio stations, your county magazines, house organs, and news letters, literature and other direct mail, your speakers' bureau, exhibits, films, and teachers, preachers, and other mass opinion leaders. On your program this afternoon, you have some outstanding representatives of some of these mass media of communication and persuasion, among them Dr. Thomas G. Hull of the A.M.A. who will talk on exhibits and films.

In your county auxiliary membership, you have undoubtedly found someone already who has an aptitude for writing, a sense of news, and who generally is awake to, and is capable of, taking advantage of public relations opportunities. No matter how talented this person is, however, there is little she can accomplish unless your county auxiliary is carrying on activities and achieving results in the public interest which are worthy of publicizing.

This brings you to the matter of program. Because you are doctors' wives and are serving as liaison between the medical profession and the public it is only logical, and certainly it is most effective, that your program operate in the field of health.



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Your state membership is now eighth in the nation; and the number of county auxiliaries organized in your state exceeds that of 36 states. You have some splendid programs already functioning, and excellent new activities are on the drawing boards and will soon be ready to be launched.

Your regional health days are especially commendable. You are covering every section of your state with the health education schedule you have set up. I understand that the regional health day at Worthington last February brought in over 1,500 persons from the surrounding community. The featuring of both lay and professional health authorities on your program, and the inclusion of Governor Youngdahl, are excellent public relations, as is, of course, the event itself.

The laying of the foundation for the formation of local health councils for concrete community planning is another highly worthy public relations objective of health days. I am happy that I shall have the opportunity this afternoon to hear the procedures and techinques for planning these days discussed by Mr. William Griffiths.

You have conceived and carried out many other health education and health advancement programs which have contributed to the public welfare and which have served to identify and credit the medical profession with improving community health. These consist of aiding in nurse recruitment, giving leadership in campaigns on behalf of March of Dimes, Red Cross, Community Chest, Crippled Children, Christmas seals, cancer research, hospital building and equipment, social and mental hygiene, and preschool examinations.

You have informed yourselves about prepayment of medical and hospital bills, about socialized medicine, and other health problems and have spread and passed this knowledge on to the public or to special groups within the general public.

You have promoted health education by increasing the reading of *HYGEIA*.

You continue to serve as health chairmen of important groups organized primarily for other than health purposes and you wield your knowledge and your influence among their members in other ways and capacities.

In doing all of this you are functioning in the external relations area of *two other* key publics: organized health groups; and organized non-health groups.

The *fifth* vital public in the area of external relations is government.

Keep your eyes well peeled upon your city government, your county government, your state government, and your national government. Raise your voice, cast your ballot, organize others to strike down whatever public action or proposed legislation deteriorates health, and to support all that which advances health and the medical profession.

But make sure that the voice of medicine is speaking as one!

Remember all of your publics: your own membership, your medical societies, your community generally, your

Fifth CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE

March 1, 2, 3, 4, 1949

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A wide range of scientific exhibits which promise to be of special interest. Time given for viewing the well displayed technical exhibits. Luncheon round tables where your questions will be answered.

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channels, other health groups, non-health groups, and your government. Learn and master the nature of each. Then serve them and motivate them so that the medical profession, and the public as well, will be benefited at all times.

Public relations requires stick-to-itiveness, just like raising kids or achieving suffrage. Women never say die and they seldom die young. This is all to your public relations' good.

Your husband doctors have the patients, spelled "p-a-t-i-e-n-t-s." And, if I understand at all you women leaders here today, you will have the patience, spelled "p-a-t-i-e-n-c-e," to achieve your public relations goals.

REGIONAL ADVISORS' TASKS OUTLINED

Hester Douglas Hammes

At the September meeting of the Woman's Auxiliary to the Minnesota State Medical Association, a round-table discussion was held by the regional advisors as part of the Workshop program.

The purpose of this discussion was to clarify and define, insofar as possible, the duties of the regional advisors. In the first place, the appointing of regional advisors was primarily intended to establish a closer contact between the state president and the county auxiliary presidents.

Ours is such a large state that it is almost impossible for a president from one section of Minnesota to know all about the background, difficulties, and problems of all the other parts of the state. To facilitate this closer tie-up between the state president and the outlying county auxiliaries, it was decided to divide Minnesota into nine districts, identical with the nine council districts of the State Medical Association. The doctors have found this particular division of the state satisfactory, and the Auxiliary thought it best to follow their example.

Now, with a regional advisor in each of the nine sections of Minnesota, a president can keep in touch with every individual auxiliary and so, because of the regional advisors, she can handle her office of State President with greater understanding and efficiency. Another important duty of the regional advisor is to work with the president-elect, who is also the organization chairman.

The advisor could be a very great help in getting preliminaries ready when a new auxiliary is to be organized in her district. She could strengthen doubtful auxiliaries and give help and advice to newly organized auxiliaries. The suggestions for this assistance should always come from the president and president-elect, who undoubtedly would be only too glad to profit from the greater knowledge at the disposal of the regional advisors.

As the State Medical Auxiliary has no executive secretary, I would suggest that each county auxiliary president, or her secretary, always send notices of the

next meeting to the regional advisor in time for her to plan ahead and arrange to attend the meeting, if possible.

It would be a splendid idea if the regional advisor could call a meeting of all the auxiliaries in her district once a year. It would give an opportunity to have an educational program. The State Medical Association office is always willing to send a speaker, if desired. This joint meeting would enable the women of different auxiliaries to get to know each other better and to exchange ideas, which would be of benefit to them all.

As can readily be seen, the position of regional advisor is no sinecure, but it is important. The future helpfulness of these advisors depends largely upon the tact they employ in being of assistance to the Association president and auxiliary presidents. I feel certain they will be of increasing usefulness to the organization and, in so doing, I wish them every success.

PRESIDENTS' ROUND TABLE BRINGS INFORMATION EXCHANGE

Mrs. John J. Ryan

A round table for county presidents was initiated at the Auxiliary Board meeting, held at the Radisson Hotel, September 26. Mrs. John J. Ryan, a past state president, served as moderator. Matters of mutual concern came up for discussion and, while nothing was settled, one could visualize the great benefit to be derived from future round-table meetings.

It was interesting to note that problems of the county societies are varied. The smaller counties have distance and weather to contend with, and the larger counties have other problems. An informal meeting, such as this, enables the members to become better acquainted, and constructive criticism was given as each one was called upon. This is truly a step in the right direction, and Mrs. Harold Wahlquist, state president, deserves much credit for her foresight in planning such meetings.

CLAY-BECKER GROUP REORGANIZES; PLANS YEAR

A reorganization meeting of the Clay-Becker Medical Society Auxiliary, attended by Mrs. Harold Wahlquist, state president, led to a new program of action for the coming year. The women have set these goals for themselves: sponsoring a nursing and teaching recruitment project, hiring a therapist to help patients at the Sand Beach Sanatorium, and holding a Health Day program. The doctors' wives will also plan for the sale, at Moorhead, Hawley, and Detroit Lakes, of articles made by the Sand Beach patients.

New officers for the Auxiliary, elected at the reorganization meeting, are: Mrs. C. W. Moberg, Detroit Lakes, president; Mrs. Oliver Moorhead, vice president; and Mrs. R. R. Hendrickson, Lake Park, secretary.

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MOWER COUNTY GROUP BUSY WITH BANDAGES

Mrs. Paul Leck

The Auxiliary to the Mower County Medical society holds eight meetings a year, for which there is a planned program. There is always a supply of cancer dressings to keep hands busy, as well as minds.

The Auxiliary met October 25, at the home of Mrs. C. C. Allen, with Mrs. Harold F. Wahlquist, president of the State Auxiliary, as guest. She outlined the program of activities of the State Auxiliary and impressed upon the members the importance of sustained interest. The program of activities for the winter season will be considered at the next meeting.

NEW AUXILIARY IN McLEOD COUNTY

Mrs. A. M. Jensen

McLeod County doctors' wives recently organized the McLeod County Medical Auxiliary. Plans have been made to hold meetings the same evening that the doctors meet.

Officers for the coming year are: Mrs. A. M. Jensen, Brownton, president; Mrs. John Gridley, Glencoe, vice president; Mrs. L. L. Kallestad, Brownton, secretary-treasurer.

Cook County Graduate School of Medicine

ANNOUNCES CONTINUOUS COURSES

SURGERY—Intensive Course in Surgical Technique, two weeks, starting January 24, February 21.
Surgical Technique, Surgical Anatomy and Clinical Surgery, four weeks, starting February 7, March 7.
Surgical Anatomy and Clinical Surgery, two weeks, starting February 21, March 21.
Surgery of Colon and Rectum, one week, starting March 7, April 11.
Surgical Pathology every two weeks.

GYNECOLOGY—Intensive Course, two weeks, starting February 21, March 21.
Vaginal Approach to Pelvic Surgery, one week, starting February 14.

OBSTETRICS—Intensive Course, two weeks, starting March 7.

MEDICINE—Intensive Course, two weeks, starting April 4.
Personal Course in Gastroscopy, two weeks, starting March 7.

PEDIATRICS—Intensive Course, four weeks, starting April 4.

DERMATOLOGY—Formal Course, two weeks, starting April 18.
Clinical Course every two weeks.

CYSTOSCOPY—Ten-Day Practical Course every two weeks.

ROENTGENOLOGY—Lecture and Diagnostic Course, two weeks, starting the first Monday of every month.
Clinical Course starting third Monday of every month.

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Of General Interest

"Blackout in Aviators" was the title of an address given by Dr. Earl H. Wood, Rochester, at a meeting of the Kiwanis Club in Mankato on November 1.

* * *

Dr. G. J. Plattes terminated his practice with Dr. A. F. Giesen in Starbuck in October and left for California to open a practice in that state.

* * *

Dr. R. W. Backus, of the Nopeming Sanatorium, spoke on the tuberculosis situation in St. Louis County at a public meeting in Biwabik on November 10.

* * *

Principal speaker at a meeting of the Renville County Medical Society in Olivia on October 19 was Dr. H. F. Flanagan of Saint Paul.

* * *

Dr. F. H. Krusen, Rochester, has been elected a member of the board of directors of the Minnesota Society for Crippled Children and Adults.

* * *

Among Duluth physicians attending a meeting of the Central Society for Clinical Research, held in Chicago early in November, were Dr. William D. Coventry and Dr. Samuel H. Boyer, Jr.

In International Falls, it was announced in October that Dr. C. C. Craig had been appointed city health officer to succeed the late Dr. M. E. Withrow.

* * *

Dr. F. W. Behmler of Morris was elected first vice president of the Minnesota Public Health Association at its annual meeting in Saint Paul on October 8.

* * *

During the middle of October, Dr. E. L. Tuohy of Duluth delivered a series of lectures at a postgraduate course held in the General Hospital in Atlantic City.

* * *

On November 2, Dr. A. R. Barnes, chairman of the board of governors of the Mayo Clinic, spoke at a meeting of the Rochester Ministerial Association on the subject, "Structure of the Mayo Organization."

* * *

Speaking at a Rotary meeting in Little Falls on October 28, Dr. A. B. Rosenfield, director of the division of maternal and child health, Minnesota Department of Health, discussed "Health of Our School Children."

* * *

Dr. and Mrs. E. J. Engberg of Faribault entertained members of the Rice County Medical Society and their

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wives at a dinner on November 1. About fifty persons attended the dinner, after which motion pictures were shown.

* * *

In Norwood, early in October, Dr. Joseph Selmo moved into a newly decorated and better equipped office on the second floor of a local drug store. Dr. Selmo has practiced in Norwood for eight years.

* * *

The Wright County Medical Society met at the home of Dr. J. J. Catlin in Buffalo on October 26 to hear a talk by Dr. O. W. Scholpp, principal speaker of the evening.

* * *

Dr. Harold S. Diehl, dean of medical sciences at the University of Minnesota, has been named to an eleven-man advisory board for the United Mine Workers' welfare and retirement fund.

* * *

The Mayo Clinic was represented by five staff members at the meeting of the American College of Surgeons in Los Angeles during October. Participating in the meeting were Dr. J. H. Grindlay, Dr. J. B. Erich, Dr. G. B. New, Dr. J. T. Priestley and Dr. G. M. Roth.

* * *

A former Rochester resident, Dr. Donald G. Tollefson was named first vice president of the American College of Surgeons at its thirty-fourth clinical congress in Los Angeles on October 21.

Dr. O. J. Esser, formerly associated with the Hoidale-Workman Clinic in Tracy, opened offices for the practice of medicine in New Ulm on October 25. Dr. Esser specializes in diseases of the eyes, ears, nose and throat.

* * *

Among speakers at the South Central Minnesota Health Day, held in Mankato on October 13, was Dr. A. D. Mattson, St. James, who discussed "Better Medical and Hospital Care for Rural Communities."

* * *

Dr. W. L. Benedict, Rochester, was re-elected executive secretary-treasurer by the American Academy of Ophthalmology and Otolaryngology at its meeting in Chicago on October 15.

* * *

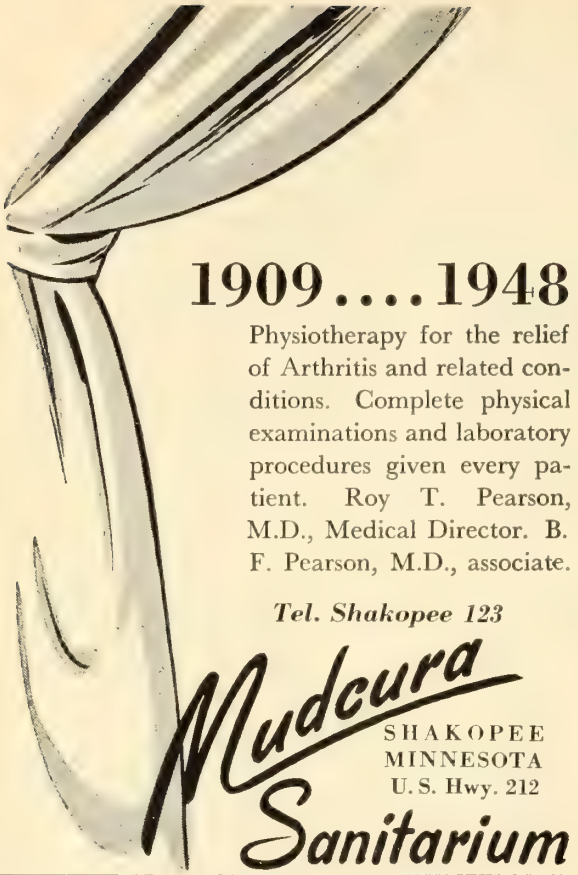
Among northern Minnesota physicians attending a meeting of the Minnesota Society of Internal Medicine in Rochester on October 18 was Dr. R. O. Sather of Crookston.

* * *

Dr. and Mrs. C. G. Uhley and Dr. and Mrs. O. K. Behr, of Crookston, spent the month of October in California, where they attended medical meetings and visited numerous cities of the state.

* * *

It was announced early in October that Dr. James R. Fox had moved his offices from 806 Physicians and Surgeons Building to 1325 Mount Curve Avenue, Minneapolis.



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Dr. Donald H. Peterson, Saint Paul, has become associated with Dr. J. Richards Aurelius in the practice of radiology, with offices at 1355 Lowry Medical Arts Building, Saint Paul.

* * *

Two of the Minnesota physicians who attended a continuation course on gastroenterology at the University of Minnesota, October 21 through 23, were Dr. Ralph Wenzel, Albert Lea, and Dr. H. J. Nilson, North Mankato.

* * *

Dr. Oliver E. H. Larson, after his discharge from the Army, opened offices for medical practice in Zumbrota in October. A graduate of the University of Minnesota Medical School, Dr. Larson served his internship at the Good Samaritan Hospital in Portland, Oregon.

* * *

Included in the speakers at the first annual meeting of the Mille Lacs County Nursing Service, held in Milaca on October 4, were Dr. R. N. Barr, of the Minnesota Department of Health, and Dr. E. J. Simons, Little Falls, health officer of District No. 8.

* * *

Eighty-five physicians from Nicollet, Le Sueur and Blue Earth Counties, while attending a meeting of the Tri-County Medical Society in New Ulm on October 12, heard Dr. E. M. Hammes of Saint Paul speak on the diagnosis and treatment of head injuries.

* * *

Dr. Erling S. Platou, Dr. Allan J. Hill and Dr. Albert J. Schroeder have announced their association in the practice of pediatrics, with offices at 953 Medical Arts Building, Minneapolis, and at 3920 Sunnyside Avenue, Edina.

* * *

Dr. Margaret C. Anderson announces the opening of practice in anesthesiology. Dr. Anderson is a Diplomate of the American Board of Anesthesiology and may be reached through the Physicians Exchange in the Twin Cities or by telephone: Drexel 8932.

* * *

Dr. C. Anderson Aldrich, director of the Rochester Child Health Project, was honored by being given the Lasker Award, it was announced in October, for outstanding contributions to the education of physicians in the psychologic aspects of the practice of medicine.

* * *

In Glenwood, construction work on a new clinic building for Dr. Edward M. Elsey is expected to be complete by January 1. The one-story building provides space for a reception room, two offices, three consultation rooms, a laboratory, x-ray room, two storage rooms, a kitchen and a recreation room.

* * *

Dr. T. L. Davis, Jr., after completing a postgraduate course in ophthalmology and otolaryngology at the Chicago Eye and Ear Hospital, returned to Wadena about November 1 to resume practice with the other staff members of the Davis Clinic. Dr. Davis graduated from the University of Minnesota Medical school in 1946.



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Dr. A. C. McKean, of the Fergus Falls State Hospital, left on October 28 for Hot Springs, Arkansas, where he has purchased a home and plans to spend the winter. At the time of his departure, it was not definitely known whether or not he intended to return to Fergus Falls in the spring.

* * *

Dr. and Mrs. A. C. Baker, Fergus Falls, combined a vacation trip in October with Dr. Baker's desire to attend the meeting of the American College of Surgeons in Los Angeles. After attending the meeting and visiting friends in southern California, they returned to Fergus Falls on October 26.

* * *

Dr. Edward Dyer Anderson, Minneapolis, was the principal speaker at the first 1948-49 meeting of the Southwest Parent-Teachers Association in Minneapolis on November 4. Dr. Anderson, a psychiatrist, discussed normal and abnormal emotional characteristics of adolescent children.

* * *

Speaking at a meeting of the Coleraine Women's Club on October 4, Dr. J. L. McLeod of Grand Rapids described his impressions and observations of eight South American countries which he visited while serving as a delegate to the Rotary International Convention in Brazil.

* * *

"Complications in Children's Disease and How to Avoid Them" was the title of a talk given by Dr. Robert Rosenthal, Saint Paul, at a meeting of Section 1 of the Child Psychology Study Circle in Saint Paul on October 4. Dr. Rosenthal is a clinical assistant professor of pediatrics at the University of Minnesota.

* * *

Dr. George N. Aagaard, University director of postgraduate medical education, conducted two three-day courses on Tuberculosis at the Center for Continuation Study in October for "family doctors" and for lay workers. Health education, case-finding surveys, and social and mental problems of the tuberculosis patient were discussed in the course for the lay workers.

* * *

"Cardiac catheterization" was described by Dr. Merrill C. Sosman, clinical professor of radiology at Harvard University, when he presented the annual Leo G. Rigler Lecture at the University of Minnesota on October 28. In his lecture he discussed the various ways in which radiological techniques can aid in the diagnosis of heart diseases.

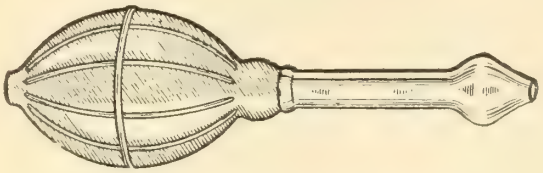
* * *

Dr. Jack T. Murphy has become associated with Dr. Joseph M. Riga in the practice of internal medicine, with offices at 524 Lowry Medical Arts Building, Saint Paul. Dr. Murphy graduated from Northwestern Medical School in 1941 and served in the army at Oak Ridge. Recently he completed a residency in medicine at the Mayo Foundation.

* * *

During the middle part of October it was announced

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that Dr. C. W. Parker of Denver, Colorado, would succeed Dr. S. Friefeld in Wadena. Dr. Friefeld plans to move to Duluth shortly before the first of the year to continue his radiology practice at a Duluth hospital. Dr. Parker received his medical degree and his training in radiology at the University of Colorado.

* * *

Approximately 800 persons attended a showing of motion pictures and a lecture by Dr. William P. Gjerde in Lake City on October 11. The color motion picture was taken in the Orient by Dr. Gjerde during his two and one-half years of service in the Army Air Forces. The program was sponsored by the Women's Club of Lake City.

* * *

Dr. Edward J. Engberg, superintendent of the Minnesota State School for the Feeble-Minded at Faribault, has been named president of the Rice County Public Health Association. A member of the board of directors of the state association, Dr. Engberg has been actively interested in tuberculosis control work for many years.

* * *

As a guest speaker at a regional conference of Minnesota welfare workers in Winona on October 11, Dr. C. Anderson Aldrich, Rochester, spoke on the subject, "Orderly and Lawful Behavior." Dr. Aldrich is director of the Rochester Child Health Project. Welfare organization representatives from thirteen counties attended the meeting.

* * *

The Children's Bureau, a unit of the Social Security Administration, has established a clearing house for research in child life to promote collaboration and interchange of information on current research in the various fields affecting child life. A bulletin on current research, which will be available to those interested, will be published in 1949.

* * *

Included in the Minnesota physicians who attended a three-day course in traumatic surgery and orthopedics at the University of Minnesota Center for Continuation Study, October 7 through 9, were Dr. F. G. Chermak, International Falls; Dr. L. Gordon Samuelson, Mankato; Dr. Theodore M. Hansen, Albert Lea; Dr. George W. Drexer, Blue Earth; Dr. N. W. Wagner, Graceville, and Dr. Troy G. Rollins, Elmore.

* * *

One of the speakers at a dinner meeting of the Citizens Committee of Sponsors of the Miller Hospital Building Fund in Saint Paul on November 17 was Dr. Charles W. Mayo, Rochester. The committee is sponsoring a campaign to raise funds for a 132-bed, six-story addition to Miller Hospital. At the dinner meeting the floor plans and the architect's conception of the new addition were shown publicly for the first time.

* * *

An honorary membership in the Minnesota Public Health Conference was awarded to Dr. Charles L. Scofield, pioneer physician in Benson, on October 8. Dr. Scofield, now eighty-three years of age and retired,

practiced medicine in Minnesota for sixty-two years. The award, given to him for distinguished service in the interests of public health, was announced at the annual meeting of the conference in Saint Paul.

* * *

A dinner sponsored by the Ellendale Commercial Club was given on October 6 to honor Dr. Edward Q. Ertel for his forty years of medical practice in the Ellendale community. A graduate of the University of Cincinnati, Dr. Ertel began practice in Ellendale immediately after completing his internship. He has served on the school board, the village council and the county draft board, and at one time was mayor of the community.

* * *

Private enterprise in medicine and hospitalization must be encouraged in Minnesota in order to advance the health of residents of the state, Governor Luther Youngdahl said in a radio address on October 12. "We must guard against the stifling of progress which might result from resort to socialization of medicine," the governor stated. He was introduced on the program by Dr. A. E. Cardle, president of the Minnesota State Medical Association.

* * *

One of the speakers at a seminar on industrial medicine and surgery, held in Minneapolis during the middle of October, was Dr. Hewitt B. Hannah, Minneapolis, who told the 100 assembled industrial physicians to pay attention to the worries as well as the injuries of their accident patients. "Nearly every traumatic injury patient develops deep anxieties about the results of his injuries and what will happen to his family," Dr. Hannah said. These anxieties, he added, can have a serious effect on the treatment given the patient.

* * *

Members of the Minnesota Society of Internal Medicine, meeting in Rochester on October 18, elected Dr. John A. Lepak, Saint Paul, president of the organization. Other officers named were Dr. F. H. K. Schaaf, Minneapolis, vice president, and Dr. A. E. Brown, Rochester, secretary-treasurer. About eighty members of the society attended the biannual meeting, at which fourteen talks on internal medicine were presented. In the evening Dr. Oliver N. Beahrs completely bewildered members and guests with her legerdemain exhibition.

* * *

Announcement was made on October 13 that Dr. Kenneth J. Johnson, formerly of Saint Paul, had joined the staff of the Bemidji Clinic. Dr. Johnson, a graduate of the University of Minnesota Medical School and holder of a master of science degree in bacteriology, served his internship at Wayne County General Hospital, Michigan. After a period of service in the armed forces, he took postgraduate work in internal medicine at the University of Minnesota. During the past summer he completed a medical residency at Wayne County General Hospital.

* * *

The following Minnesota surgeons were received into fellowship in the American College of Surgeons at the convocation during the Clinical Congress in Los Angeles on October 22, 1948: Martin O. Wallace, Duluth; Ann



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Whelan Arnold, Frank T. Cavanor, Gerald M. Koepcke, Herbert W. Peterson, Richard S. Rodgers, Minneapolis; James E. Musgrove, Joseph H. Pratt, William D. Seybold, Rochester; Joseph W. Goldsmith, Frank W. Quattlebaum, Leander T. Simons, Elmer A. Smisek, Vernon D. E. Smith, St. Paul.

* * *

The National Society for Crippled Children and Adults, which includes the various state units, and devotes itself to the education, rehabilitation and employment of all handicapped persons, is supported by the annual sale of Easter Seals. The society announces an annual grant of $5,000 by the college sorority, Alpha Gamma Delta, for the training of a limited number of vocational workers and job-placement technicians specializing in the employment problems of persons disabled by cerebral palsy.

* * *

Dr. Edward J. Richardson has opened offices with Dr. F. E. B. Foley at 228 Lowry Medical Arts Building, Saint Paul, for the practice of urology. A graduate of Johns Hopkins medical school, 1943, Dr. Richardson interned in urology for nine months at Johns Hopkins Hospital, practiced at Pierre, South Dakota, and was assistant resident in urology at the Ancker and Miller Hospitals, Saint Paul, for a few months before serving ninteen months in the Army. From July 1, 1947, to July 1, 1948, he was resident in urology at the Ancker Hospital.

* * *

Dr. N. L. Werner and Dr. S. H. Anderson, both of Red Wing, became associated in practice on November 1, when it was announced that the two of them would jointly conduct the Red Wing Clinic.

Dr. Werner previously practiced in Red Wing from 1908 until 1943, at which time he became resident physician at the state hospital in Hastings. Dr. Anderson has practiced in Red Wing since 1922, much of the time with Dr. A. E. Johnson in the Red Wing Clinic. After the retirement of Dr. Johnson several months ago, Dr. Anderson conducted the clinic alone.

* * *

A report issued during the first week of November from the Cancer Detection Center at the University of Minnesota showed that more than half of the 957 persons examined during the first seven months of the Center's operation were found to require medical attention.

Among the abnormal conditions discovered in 527 persons were the following: 15 definite cases of cancer, 235 precancerous lesions, 131 benign tumors, 49 suspicious tumors, and 270 nontumorous but non-normal conditions.

The 430 persons found to be apparently in good health were advised to return to the Center for re-examination every six months. Of the 957 persons examined, 478 were women and 479 men, all aged forty-five or over.

* * *

Among Minnesota physicians who attended a three-day course in methods of diagnosis and treatment of tuberculosis and other diseases of the chest at the University of Minnesota Center for Continuation Study, October 18 through 20, were Dr. L. Kenneth Onsgard, Houston; Dr. G. A. Miners, Bemidji; Dr. Ralph L. Estrem and Dr. W. O. B. Nelson, Fergus Falls; Dr. F. M. McCarten, Stillwater; Dr. E. C. Burseth, Forest Lake; Dr. Stella L. Wilkinson, Faribault; Dr. Russel R. Hendrickson, Lake Park; Dr. Sidney A. Whitson, Albert Lea, and Dr. B. J. Cronwell and Dr. F. H. Rosenthal, Austin.

* * *

The Rehabilitation Center has been established in Saint Paul, sponsored by the Junior League of Saint Paul, the Minnesota Society for Crippled Children and Adults, with space supplied by the Wilder Charities of Saint Paul at the Wilder Dispensary. Mrs. B. R. Rutherford is in charge. Physicial therapy in the form of heat radiation, massage and hydrotherapy, occupational therapy and speech training are furnished on a part pay and free basis. The Center is a nonprofit organization, and its policies are determined by a medical advisory board composed of seven members of the Ramsey County Medical Society.

* * *

Rochester, though packed with medical personnel, urgently needs more physicians—but the ones needed are general practitioners.

So stated Dr. William F. Braasch, retired Rochester physician, when he came out of retirement in late October to lead a campaign for the construction of a community hospital. Other than the hospitals associated with the Mayo Clinic whose facilities are utilized almost com-



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pletely by the clinic, there isn't a hospital within forty miles of Rochester. Though world-known as a medical center, Rochester is the only community of its size in the United States without a public hospital, Dr. Braasch said.

Partly because of the lack of hospital facilities, there are only three or four general practitioners in all of Olmsted County. "The scarcity of doctors of this type is a detriment to the health of the people of this community," Dr. Braasch stated.

* * *

Two Saint Paul surgeons and three Minneapolis surgeons were admitted to membership in the International College of Surgeons, when the United States chapter of the organization held its thirteenth annual assembly and convocation in St. Louis, Missouri, November 15 through 19.

New members from Saint Paul are Dr. Robert J. Richardson and Dr. Edward V. Davis, while those from Minneapolis are Dr. Earl H. Dunlap, Dr. Alvin J. Kistler and Dr. Lloyd A. Whitesell.

Named as an associate fellow of the group was Dr. Howard A. Vogel of New Ulm. Dr. E. K. Ingebrigtson of Moorhead was elected as an affiliate of the organization.

* * *

Collecting books written by persons suffering from mental or physical illness is the rather unusual semi-hobby of Dr. Walter C. Alvarez of Rochester.

His collection includes books by psychotics, neurasthenics, alcoholics, "dope" addicts, hunchbacks, paralytics, spastics and others. Some of the books were written while the authors' illnesses were just beginning, others after recovery had occurred. Many of the volumes are by well-known journalists and authors who were "going insane" or were addicted to morphine or alcohol.

Dr. Alvarez began his collection in 1907 when he first obtained Charles Beers' "A Mind That Found Itself." Since then, the unusual library has grown steadily, encompassing, for example, a story written by De Maupassant as his mental illness began. A recent addition to the collection is the fairly new book, "The Snake Pit."

"Through reading the books in my collection," Dr. Alvarez said recently, "I have learned to understand better the ways people in these unfortunate situations think, and what they like and do not like in their handling by physicians. Their writings are often amazingly frank."

* * *

HOSPITAL NEWS

Asbury Hospital, Minneapolis, has been approved for a medical residency by the Council on Medical Education and Hospitals of the AMA and by the American Board of Internal Medicine.

* * *

Thirty-two physicians and their wives attended the annual banquet held at St. Vincent's Hospital in Crookston on November 4. Speaking to express the appreciation of the physicians for the banquet were Dr. M. O. Oppegaard and Dr. R. O. Sather, both of Crookston.



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Dr. Joel C. Hultkrans

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Members of the Freeborn Medical Society, meeting in Albert Lea in September, voted $1,000 toward the Naeve Hospital equipment fund. In addition, they voted to furnish the physicians' room in the new hospital wing. The room will contain a medical library and, later, a motion picture projector for showing medical films.

* * *

At the annual staff meeting at Northwestern Hospital, Minneapolis, in September, Dr. R. S. Ylvisaker was elected president of the attending medical staff. He succeeds Dr. J. C. Miller in the office. Named as vice president was Dr. Edwin G. Benjamin, while Dr. Albert T. Hays was elected secretary-treasurer.

Named as new members of the executive committee were Dr. Lawrence Larson, Dr. Chauncey A. McKinlay, Dr. Samuel B. Solhaug, Dr. Kenneth J. St.Cyr, Dr. Cyrus O. Hansen and Dr. Stanley Lofsness.

* * *

BLUE SHIELD NEWS

Applications received for Blue Shield to October 30, 1948	100,309
Blue Shield cases paid from October 1 to October 30, 1948	726
Total, 1948	2,573
Amount paid on Blue Shield cases from October 1 to October 30, 1948	$ 26,706.19
Total, 1948	95,674.80

Blue Shield, the voluntary prepaid plan for medical and surgical care, can be an influential factor in counteracting suggested compulsory health insurance. In Minnesota, Blue Shield is comparatively new, but as the above figures show it already is functioning to the benefit of a large number of subscribers. As it continues to expand it will publicize itself. In the meantime Blue Shield needs to be brought to the attention of all residents of this state, and such contact is perpetually under way through the Blue Shield representatives in the field. However, it is believed that the doctors of Minnesota could do a tremendous service to Minnesota Medical Service, Inc., by bringing the advantages of Blue Shield to each patient's attention and emphasizing to the patient that he personally approves the plan. The "family doctor's" sanction of Blue Shield is often the determining factor in proving its worth to his patient.

Blue Shield provides benefits for the following services rendered by licensed doctors of medicine: for surgery and obstetrical deliveries in the hospital, the patient's home, and the doctor's office; for medical care rendered to a hospitalized bed-patient; for x-rays taken at the direction of a doctor of medicne if they are related to the above services; for the services of an anesthesiologist. In each instance the allowance is determined by the actual service rendered and payment made in accordance with the Blue Shield Schedule of Payments.

The advantages of Blue Shield are twofold—not only does it provide for the services of a doctor of medicine during illness, thereby carrying for the Blue Shield contract holder the burden of financial expense, but also it assures the physician of at least partial payment from the Blue Shield office for his services. The plan does not attempt to cover routine or miscellaneous minor services, but rather attempts to provide for serious illness as well as all surgery—in other words, major expenditures.

Through the co-operation of the Red River Valley Medical Society, an extensive campaign publicizing the Blue Shield plan has been under way during October and November during which time the doctor's offices, the hospitals, the farm bureau headquarters, the nurses, druggists, schools and newspapers together with the radio stations in the area have assisted in bringing the plan to the attention of residents of that area. In addition, some time was spent by Blue Shield office personnel in contacting the medical personnel of the doctor's offices and clinic in the area relative to the processing of Blue Shield claims. It is anticipated that similar programs may be carried out in other sections of the state.

November 15, 1948, marks the anniversary of the first Blue Shield contract to become effective in Minnesota. The co-operation of the Blue Shield participating doctors of medicine during this first year of operation has done much to assure its success. However, there remains the tremendous educational job to be done for Minnesota Medical Service Inc.—the doctor's assistance in this task will be of inestimable value. Blue Shield as a voluntary plan appeals to the American public, something which is desired is much more acceptable than something to which we must subscribe—Blue Shield services are ample and the contract cost nominal. It is the doctor's plan for the benefit of his patient. A smoothly and expeditiously functioning voluntary, nonprofit medical, surgical, and obstetrical plan is our most adequate defense against any proposed national plan for compulsory health insurance.



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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

PATHOLOGY. Edited by W. A. D. Anderson, M.A., M.D., F.A.C.P. Professor of Pathology and Bacteriology, Marquette University School of Medicine, Milwaukee, Wisconsin. 1453 pages. Illus. Price $15.00, cloth. St. Louis: C. V. Mosby Co., 1948.

AN INTRODUCTION TO GASTRO-ENTEROLOGY. Fourth Edition. Walter C. Alvarez, M.D. Professor of Medicine, University of Minnesota, the Mayo Foundation, a Senior Consultant in the Division of Medicine, The Mayo Clinic. 903 pages. Illus. Price $12.50, cloth. New York: Paul B. Hoeber, Inc., 1948.

THE CASE AGAINST SOCIALIZED MEDICINE. A constructive analysis of the attempt to collectivize American medicine. Lawrence Sullivan. 53 pages. Price $1.50, cloth. Washington, D. C.: Statesman Press, 1948.

HEART. A Physiologic and Clinical Study of Cardio-Vascular Diseases. Aldo A. Luisada, M.D. Instructor in Physiology and Pharmacology, Tufts College Medical School Lecturer in Medicine; Lecturer, Postgraduate Division, Tufts College Medical School; Associate in Medicine, Beth Israel Hospital, Boston, Mass.; Former Professor of Medicine, Ferrara, Italy. 653 pages. Illustrated. Baltimore: Williams & Wilkins Company. Price, $10.00.

This textbook represents a great deal of work on the part of its author. Because of our increased knowledge of heart disease and the great amount of literature that has been published in the past ten years, it is difficult to correlate the valuable material and to separate it from the less valuable. The author attempts to do that in his book and has accomplished something in doing so. However, the book is incomplete when one considers it as a text book on heart disease in that there is little space given to the discussion of treatment, although I say this with the knowledge that there is little to be said about treatment in many cases. But treatment is much more appreciated if the philosophical background is presented.

It is an excellent treatise on the anatomy and physiology of heart disease. I would recommend the book for library use only.

JOSEPH M. RYAN, M.D.

OFFICE IMMUNOLOGY; INCLUDING ALLERGY: A GUIDE FOR THE PRACTITIONER. Edited by Marion B. Sulzberger, M.D., Professor of Clinical Dermatology and Syphilology, and Director, New York Skin and Cancer Unit, New York Post-Graduate Medical School and Hospital, and Rudolf L. Baer, M.D., Instructor in Dermatology and Syphilology, New York Skin and Cancer Unit, New York Post-Graduate Medical School and Hospital. 420 pages. Illus. (General Practice Manuals). Chicago: Year Book Publishers, Inc., 1947. Price $6.50.

It is no small treat to review the varied authors' compilation, "Office Immunology." Contained therein is a tremendous amount of concise and useful information dealing, for the most part, adequately with a wide range of immuno-biological procedures. Obviously, in presenting so vast and complex a subject, streamlining has been necessary, but this has not denied the reader the essential details in implementing a given technique.

Allergy, in its many important clinical phases, is lucidly and usefully presented. A substantial segment of this book is devoted to phylactic and prophylactic anti-bacterial and anti-viral measures. In many instances, where specific information or individual experiences have allowed, the authors have attempted to assess the value and/or pitfalls of the subject being considered. Neither has there been forgotten the ever-present difficulty of locating precise sources of immunological material, and whenever possible such sources are indicated. Whether your chosen field is basic or clinical medicine, this book is a "must."

To my knowledge, nowhere in a single handy volume is there to be found such authoritative, selectively condensed information on immuno-biological phenomena as applied to medicine.

S. MACKOFF, M.D.

HANDBOOK ON FRACTURES. Duncan Eve, Jr., M.D., F.A.C.S., Surgeon-in-Chief, Nashville, Chattanooga and St. Louis Railroad; District Surgeon, Louisville and Nashville Railroad; Associate Professor of Surgery, Vanderbilt University School of Medicine; Member of the Southern Surgical Society; Member of The American Association for the Surgery of Trauma; Chairman of the Committee on Fractures of the Medical and Surgical Section of the American Railroad Association; Member of the Committee on Fractures of the American College of Surgeons; Attending Surgeon, St. Thomas Hospital, Nashville, Tennessee, in collaboration with Trimble Sharber, A.B., M.D., Attending Surgeon, St. Thomas Hospital, Nashville, Tennessee. 263 pages. Illustrated. St. Louis: C. V. Mosby Co., 1947. Price $5.00.

This concise and authoritative résumé of fracture treatment will be a welcome handy reference for students and general practitioners. The material is well organized for handy reference.

The illustrations are adequate and clear.

S. W. SHIMONEK, M.D.

FUNDAMENTALS OF CLINICAL NEUROLOGY. H. Houston Merritt, M.D., Professor of Clinical Neurology, College of Physicians and Surgeons, Columbia University; Chief of Division of Neuropsychiatry, The Montefiore Hospital; Fred A. Mettler, M.D., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University; and Tracy Jackson Putnam, M.D., Professor of Neurology and Neurological Surgery, College of Physicians and Surgeons, Columbia University. 289 pages. Illustrated. Philadelphia: The Blakiston Company, 1947. Price, $6.00.

This is an interesting, well written book of less than 300 pages that combines a brief review of neuro-anatomy and physiology with the clinical aspects of neurology. The first portion dealing with examination of the nervous system covers particularly well the cranial nerves. One might wish for more attention to the testing of peripheral nerves, and especially the inclusion of some diagrams of nerve injury.

The remainder of the book deals with anatomic diagnosis. It does this by considering the nervous system segmentally: peripheral nerves, spinal cord, brain stem, et cetera. In each subdivision after covering the anatomy, blood supply, and physiology, there is a brief consideration of diseases and clinical syndromes. In a book this brief there is little space given to details of therapy, but the chief therapeutic agents are mentioned. A valuable chapter is the one on cerebro-spinal fluid giving an extensive listing of cerebro-spinal fluid changes in various diseases.

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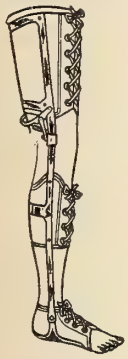
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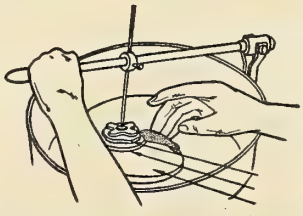
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*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

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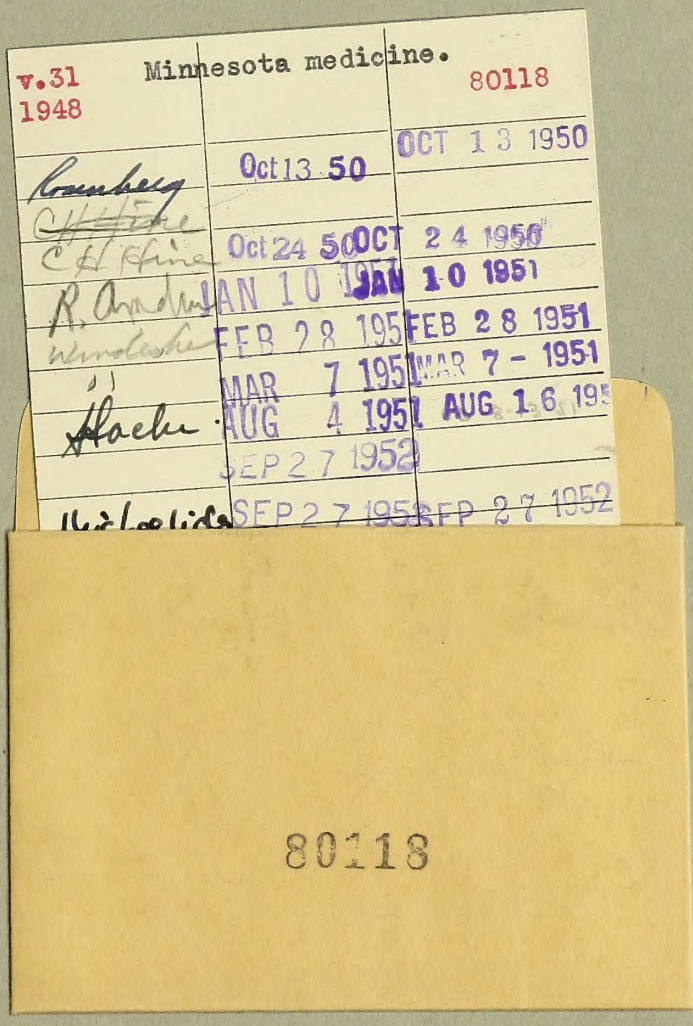
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